CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

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May 21st, 2014 NWIC File No.: 13-1782

Nathaniel Taylor
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

Re: Record search results for the proposed Cherryland Fire Station 23 Project.

Dear Mr. Taylor,

Per your request received by our office on May 21st, 2014, a records search was conducted for the above referenced project by reviewing pertinent Northwest Information Center (NWIC) base maps that reference cultural resources records and reports, historic-period maps, and literature for Alameda County. Please note that use of the term cultural resources includes both archaeological resources and historical buildings and/or structures.

Review of this information indicates that there have been no cultural resource surveys of the Cherryland Fire Station 23 project area. This project area contains no recorded archaeological resources. The State Office of Historic Preservation Historic Property Directory (OHP HPD) (which includes listings of the California Register of Historical Resources, California State Historical Landmarks, California State Points of Historical Interest, and the National Register of Historic Places) lists no recorded buildings or structures within the proposed project area. In addition to these inventories, the NWIC base maps show no recorded buildings or structures within the proposed project area.

At the time of Euroamerican contact the Native Americans that lived in the area were speakers of the Chochenyo language, part of the Costanoan language family (Levy 1978:485-495). There are no Native American resources in or adjacent to the proposed project area referenced in the ethnographic literature.

Based on an evaluation of the environmental setting and features associated with known sites, Native American resources in this part of Alameda County have been found on the banks and mid-slope terraces above seasonal and perennial waterways, at foothill-valley interfaces, along the San Francisco Bay margin and generally within Holocene age landforms. The Cherryland Fire Station 23 project area contains a flat, less than one-half mile from San Lorenzo Creek and is within a Holocene age landform.

Given the similarity of one or more of these environmental factors, there is a moderate to high potential for unrecorded Native American resources to be within the proposed Cherryland Fire Station 23 project area.

Review of historical literature and maps gave no indication of the possibility of historic-period archaeological resources within the Cherryland Fire Station 23 project area. With this in mind, there is a low potential for unrecorded historic-period archaeological resources to be within the proposed Cherryland Fire Station 23 project area.

The 1959 Hayward USGS 15-minute topographic quadrangle depicts the symbol for a "built-up area" within the Cherryland Fire Station 23 project area. If these buildings or structures are extant, these unrecorded buildings or structures meet the Office of Historic Preservation's minimum age standard that buildings, structures, and objects 45 years or older may be of historical value.

RECOMMENDATIONS:

1) There is a moderate potential for Native American archaeological resources and a low potential for historic-period archaeological resources to be within the project area. We recommend a qualified archaeologist conduct further archival and field study to identify cultural resources. Field study may include, but is not limited to, pedestrian survey, hand auger sampling, shovel test units, or geoarchaeological analyses as well as other common methods used to identify the presence of archaeological resources. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

2) We recommend you contact the local Native American tribe regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

3) The proposed project area may contain buildings or structures that meet the Office of Historic Preservation's minimum age standard. If the proposed project area contains buildings or structures that meet the minimum age requirement, prior to commencement of project activities, it is recommended that this resource be assessed by a professional familiar with the architecture and history of Alameda County. Please refer to the list of consultants who meet the Secretary of Interior's Standards at http://www.chrisinfo.org.

4) Review for possible historic-period buildings or structures has included only those sources listed in the attached bibliography and should not be considered comprehensive.

5) If archaeological resources are encountered **during construction,** work should be temporarily halted in the vicinity of the discovered materials and workers should avoid

altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. Project personnel should not collect cultural resources. Native American resources include chert or obsidian flakes, projectile points, mortars, and pestles; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic-period resources include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, often located in old wells or privies.

6) It is recommended that any identified cultural resources be recorded on DPR 523 historic resource recordation forms, available online from the Office of Historic Preservation's website: http://ohp.parks.ca.gov/default.asp?page_id=1069

Thank you for using our services. Please contact this office if you have any questions, (707) 588-8455.

Sincerely,

Lacey Klopp
Researcher

LITERATURE REVIEWED

In addition to archaeological maps and site records on file at the Historical Resources Information System, Northwest Information Center, the following literature was reviewed:

Bowman, J.N.
1951 *Adobe Houses in the San Francisco Bay Region*. In Geologic Guidebook of the San Francisco Bay Counties, Bulletin 154. California Division of Mines, Ferry Building, San Francisco, CA.

Cook, S.F.
1957 *The Aboriginal Population of Alameda and Contra Costa Counties*. University of California Anthropological Records 16(4):131-156. Berkeley and Los Angeles.

Fickewirth, Alvin A.
1992 *California Railroads*. Golden West Books, San Marino, CA.

General Land Office
1876 Survey Plat for Township 3 South/Range 2 West.

Gudde, Erwin G.
1969 *California Place Names: The Origin and Etymology of Current Geographical Names*. Third Edition. University of California Press, Berkeley and Los Angeles.

Hart, James D.
1987 *A Companion to California*. University of California Press, Berkeley and Los Angeles.

Heizer, Robert F., editor
1974 *Local History Studies*, Vol. 18., "The Costanoan Indians." California History Center, DeAnza College, Cupertino, CA.

Helley, E.J., K.R. Lajoie, W.E. Spangle, and M.L. Blair
1979 *Flatland Deposits of the San Francisco Bay Region - Their Geology and Engineering Properties, and Their Importance to Comprehensive Planning*. Geological Survey Professional Paper 943. United States Geological Survey and Department of Housing and Urban Development.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, revised by William N. Abeloe
1966 *Historic Spots in California*. Third Edition. Stanford University Press, Stanford, CA.

Hoover, Mildred Brooke, Hero Eugene Rensch, and Ethel Rensch, William N. Abeloe, revised by Douglas E. Kyle
1990 *Historic Spots in California*. Fourth Edition. Stanford University Press, Stanford, CA.

Hope, Andrew
2005 *Caltrans Statewide Historic Bridge Inventory Update*. Caltrans, Division of Environmental Analysis, Sacramento, CA.

Kroeber, A.L.
1925 *Handbook of the Indians of California*. Bureau of American Ethnology, Bulletin 78, Smithsonian Institution, Washington, D.C. (Reprint by Dover Publications, Inc., New York, 1976).

Levy, Richard
1978 Costanoan. In *California,* edited by Robert F. Heizer, pp. 485-495. Handbook of North American Indians, vol. 8, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Milliken, Randall
1995 *A Time of Little Choice: The Disintegration of Tribal Culture in the San Francisco Bay Area 1769-1810*. Ballena Press Anthropological Papers No. 43, Menlo Park, CA.

Myers, William A. (editor)
1977 *Historic Civil Engineering Landmarks of San Francisco and Northern California*. Prepared by The History and Heritage Committee, San Francisco Section, American Society of Civil Engineers. Pacific Gas and Electric Company, San Francisco, CA.

Nelson, N.C.
1909 *Shellmounds of the San Francisco Bay Region*. University of California Publications in American Archaeology and Ethnology 7(4):309-356. (Reprint by Kraus Reprint Corporation, New York, 1964)

Nichols, Donald R., and Nancy A. Wright
1971 Preliminary Map of Historic Margins of Marshland, San Francisco Bay, California. U.S. Geological Survey Open File Map. U.S. Department of the Interior, Geological Survey in cooperation with the U.S. Department of Housing and Urban Development, Washington, D.C.

Roberts, George, and Jan Roberts
1988 *Discover Historic California*. Gem Guides Book Co., Pico Rivera, CA.

State of California Department of Parks and Recreation
1976 *California Inventory of Historic Resources*. State of California Department of Parks and Recreation, Sacramento.

State of California Department of Parks and Recreation and Office of Historic Preservation
1988 *Five Views: An Ethnic Sites Survey for California*. State of California Department of Parks and Recreation and Office of Historic Preservation, Sacramento.

State of California Office of Historic Preservation **
2012 *Historic Properties Directory*. Listing by City (through April 2012). State of California Office of Historic Preservation, Sacramento.

Thompson & West
1878 Official and Historical Atlas Map of Alameda County, California. Thompson & West, Oakland. (Reprint by Valley Publishers, Fresno, 1976)

Williams, James C.
1997 *Energy and the Making of Modern California*. The University of Akron Press, Akron, OH.

Woodbridge, Sally B.
1988 *California Architecture: Historic American Buildings Survey*. Chronicle Books, San Francisco, CA.

Works Progress Administration
1984 *The WPA Guide to California*. Reprint by Pantheon Books, New York. (Originally published as California: A Guide to the Golden State in 1939 by Books, Inc., distributed by Hastings House Publishers, New York.)

**Note that the Office of Historic Preservation's *Historic Properties Directory* includes National Register, State Registered Landmarks, California Points of Historical Interest, and the California Register of Historical Resources as well as Certified Local Government surveys that have undergone Section 106 review.

GEOTECHNICAL EVALUATION
CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

PREPARED FOR:
Muller and Caulfield
339 15th Street, Suite 300
Oakland, California 94612

PREPARED BY:
Ninyo & Moore
Geotechnical and Environmental Sciences Consultants
1956 Webster Street, Suite 400
Oakland, California 94612

April 17, 2013
Project No. 401811002

April 17, 2013
Project No. 401811002

Ms. Rosemary Muller
Muller & Caulfield
339 15th Street, Suite 300
Oakland, California 94612

Subject: Geotechnical Evaluation
Cherryland Fire Station
19745 Meekland Avenue
Hayward, California

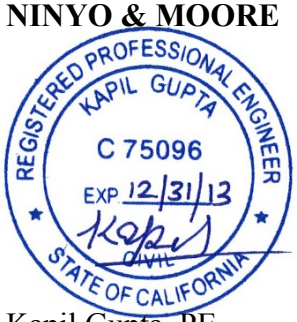
Dear Ms. Muller:

In accordance with your request, we have prepared this geotechnical evaluation for the proposed Fire Station to be located at 19745 Meekland Avenue in Hayward, California. This report presents our geotechnical findings, conclusions, and recommendations regarding the proposed project.

As an integral part of our role as the geotechnical engineer-of-record, we request the opportunity to review the construction plans before they go to bid and to provide follow-up construction observation and testing services.

We appreciate the opportunity to be of service on this project.

Sincerely,
NINYO & MOORE



Kapil Gupta, PE
Project Engineer

Peter C. Connolly, PE, GE
Principal Engineer

KG/PCC/caa

Distribution: (1) Addressee (1 hard copy and via e-mail)

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1. INTRODUCTION

In accordance with your request, we have performed a geotechnical evaluation for the proposed Fire Station to be located at 19745 Meekland Avenue in Hayward, California (Figure 1). The purpose of our study was to assess potential geologic hazards and evaluate geotechnical conditions for the proposed improvements, and provide our recommendations for the design and construction of this project.

2. SCOPE OF SERVICES

Ninyo & Moore's scope of services for this project generally included review of pertinent geologic and geotechnical background data, performance of a geologic reconnaissance, subsurface evaluation, laboratory testing, engineering analysis with regard to the proposed construction, and preparation of this report. Specifically, we performed the following tasks:

- Review of background data listed in the References section of this report. The data reviewed included topographic maps, geologic data and maps, fault and seismic hazard maps, flood hazard maps, and a site plan for the project.
- Geologic reconnaissance to observe site conditions and surficial geologic conditions.
- Mark out of the proposed exploratory boring locations prior to contacting Underground Service Alert.
- Procurement of subsurface drilling permit from the Alameda County Public Works Agency (ACPWA)
- Subsurface exploration consisting of drilling and sampling of three (3), solid-stem auger borings advanced to depths of approximately 25 to 60 feet. A representative of Ninyo & Moore logged the subsurface conditions exposed in the borings and collected bulk and relatively undisturbed soil samples for laboratory tests. The borings were backfilled in conformance with the ACPWA drilling permit.
- Laboratory testing of selected soil samples was performed to evaluate the geotechnical properties of the subsurface materials including in-situ moisture content and density, percentage of soil particles finer than the No. 200 sieve, Atterberg limits, expansion index, corrosivity, and R-value.
- Compilation and analysis of the field and laboratory data to evaluate and provide recommendations for the following:
    - Subsurface conditions anticipated at the site, including stratigraphy and depth to groundwater.

- Geotechnical issues that may impact the design, construction, and/or performance of the proposed improvements.
- Design parameters for foundations for the proposed improvements.
- Seismic design parameters, including peak ground acceleration (PGA) and seismic coefficients as per the 2010 California Building Code (CBC).
- Earthwork guidelines for excavation and compaction, subgrade preparation, suitability of using the onsite soil as fill material for the proposed improvements, and trench backfill.

- Preparation of this report presenting our findings and conclusions regarding the geotechnical conditions encountered at the project site, and our geotechnical recommendations for the design and construction of the proposed fire station.

3. SITE DESCRIPTION

The site is located at 19745 Meekland Avenue, in Hayward, County of Alameda, California (37.6769 degrees north latitude, -122.1110 degrees west longitude). The site consists of Assessor's Parcel Number (APN) 429-5-22 and 459-5-23, located on the southwest side of Meekland Avenue. The rectangular-shaped site is bordered by Meekland Avenue to the northeast and residential developments to the northwest and southeast, and the Southern Pacific railroad and residential developments to the southwest. The site and site vicinity are presented in an aerial photograph on Figure 2. The site covers approximately 38,000 square feet and is currently occupied by a vacant residential buildings located in the northeastern portion of the site, slab-on-grade foundations remaining from structures that had been demolished previously, and asphalt pavements. Based on the site topographical survey (Sandis, 2012), the site is relatively level with an elevation of approximately 53 to 55 feet above the project datum and a gentle slope of approximately 0.5% percent on average down to the southwest.

4. PROJECT DESCRIPTION

We understand that the project will consists of a two-story fire station with building foot print of about 12,000 square feet which will house an apparatus facility, kitchen/dining room, administrative offices and dormitory/sleeping rooms. Additional improvements will include underground utilities, external generator, above ground fuel tank, equipment yard, trash/recycling pad, parking areas, asphalt and concrete pavements, and associated hardscape (Figure 3). We understand that

the column and wall loads (dead plus live) will be up to 75 kips and 3 kips per foot, respectively, and the finish floor elevation for the first floor will be near the existing grade.

5. FIELD EXPLORATION AND LABORATORY TESTING

Our field exploration included a geologic reconnaissance and subsurface exploration of the project site. The subsurface exploration was conducted on March 19, 2013 and consisted of drilling, logging, and sampling of three exploratory borings. The locations of these borings are presented on Figure 2. Prior to commencing the subsurface exploration, Underground Service Alert was notified for field marking of the existing utilities and a drilling permit was obtained from the ACPWA.

The borings were advanced to a depth of up to approximately 25 to 60 feet below the existing grade with a truck-mounted drill rig equipped with solid-stem auger. A representative of Ninyo & Moore logged the subsurface conditions exposed in the borings and collected drive and bulk soil samples from the borings. The samples were then transported to our geotechnical laboratory for testing. The borings were backfilled in accordance with the ACPWA permit shortly after drilling. Descriptions of the subsurface materials encountered are presented in the following sections. Detailed logs of the borings are presented in Appendix A.

Laboratory testing of soil samples recovered from the borings included in-place moisture content and dry density, percentage of particles finer than the No. 200 sieve, Atterberg limits, expansion index, soil corrosivity, and R-value. The results of the in-place moisture content and dry density tests are shown at the corresponding sample depths on the boring logs in Appendix A. The results of the other laboratory tests performed are presented in Appendix B.

6. GEOLOGY AND SUBSURFACE CONDITIONS

Our findings regarding regional and site geology, subsurface soil, and groundwater conditions at the subject site are provided in the following sections.

6.1. Regional Geology

The project site is located on the east side of San Francisco Bay in the Coast Ranges geomorphic province of California. The Coast Ranges are comprised of several mountain ranges and structural valleys formed by tectonic processes commonly found around the Circum-Pacific belt. Basement rocks have been sheared, faulted, metamorphosed, and uplifted, and are separated by thick blankets of Cretaceous and Cenozoic sediments that fill structural valleys and line continental margins. The San Francisco Bay Area has several ranges that trend northwest, parallel to major strike-slip faults such as the San Andreas, Hayward, and Calaveras. Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement.

6.2. Site Geology

Published geologic maps indicate that the site is underlain by Holocene alluvium (Graymer, 2000; Dibblee, Jr., 2005). Graymer (2000) indicates that the site is underlain by Holocene alluvial fan and fluvial deposits consisting of medium dense to dense gravely sand or sandy gravel that generally grade upwards to sandy or silty clay. Dibblee, Jr. (2005) indicates that the site is underlain by Holocene surficial sediments consisting of alluvial gravel, sand and clay of valley areas including gravel and sand of major stream channels. The results of our subsurface exploration indicate that the project site is generally underlain by fill and alluvium. A map of regional geology is presented as Figure 4.

6.3. Subsurface Conditions

The following sections provide a generalized description of the geologic units encountered during our subsurface evaluation. More detailed descriptions are presented on the boring logs in Appendix A.

6.3.1. Pavement Section

The pavement section encountered in Borings B-1, B-2, and B-3 consisted of asphalt concrete (AC) about 3 to 5 inches thick and aggregate base (AB) about 3½ and 4 inches thick.

6.3.2. Fill

Fill was encountered in the borings below the pavement section to depths of up to approximately 4 feet. As encountered, the fill material generally consisted of moist, stiff to very stiff, clay with trace sand, sub-angular gravels and scattered rootlets. Construction debris from previously demolished structures may also be encountered during construction activities.

6.3.3. Alluvium

Alluvium was encountered in the Borings B-1 through B-3 from below the fill to the depths explored. The alluvium generally consisted of moist to saturated, stiff to very stiff, clay; moist, medium dense silty sand; saturated, medium dense to dense, poorly graded sand with silt and clay; and saturated, very dense, clayey gravel with sand.

6.4. Groundwater

Groundwater was encountered at depths of approximately 22 ½ and 24 feet during drilling in Borings B-1 and B-2, respectively. Groundwater was not encountered in Boring B-3. However, fluctuations in the groundwater level may occur because of variations in ground surface factors. In addition, groundwater levels in fine-grained soil (e.g. those at this site) are known to take significant time to stabilize. Because of time constraints, the borings were required to be backfilled on the day of drilling. The Seismic Hazard Zone Report for the Hayward Quadrangle (CGS, 2003) indicates that the historic high groundwater level in the site vicinity is approximately 20 to 30 feet below ground surface.

7. GEOLOGIC HAZARDS AND GEOTECHNICAL ISSUES

This study considered a number of potential issues relevant to the proposed construction on the subject site, including seismic hazards, landsliding, flood hazards, expansive soil, unsuitable soil materials, settlement of compressible soil layers from static and seismic loading, potential of on-site soil to corrode ferrous metals and promote sulfate attack on concrete, and excavation characteristics. These issues are discussed in the following subsections.

7.1. Seismic Hazards

The seismic hazards considered in this study include the potential for ground surface rupture and ground shaking because of seismic activity, seismically induced liquefaction, dynamic settlement, seismic slope stability, and tsunamis and seiches. These potential hazards are discussed in the following subsections.

7.1.1. Historical Seismicity

The site is located in a seismically active region, as is the majority of northern California. Table 1 summarizes the significant historic earthquakes that have occurred within a radius of approximately 100 kilometers (62 miles) of the site with a magnitude of 6.0 or more since 1800.

Table 1 – Historic Earthquakes

Date	Magnitude[1] (M)	Epicentral Distance[1] km (miles)
June 21, 1808	6.0	36 (12.0)
June 10, 1836	6.8	15 (27.6)
June 1838	7.0	26 (6.6)
November 26, 1858	6.1	27 (19.2)
October 8, 1865	6.3	56 (31.8)
October 21, 1868	6.8	2 (49.2)
May 19, 1889	6.0	40 (15.0)
April 19, 1892	6.4	80(37.2)
April 21, 1892	6.2	93 (45.6)

Table 1 – Historic Earthquakes

Date	Magnitude[1] (M)	Epicentral Distance[1] km (miles)
March 31, 1898	6.2	63 (22.2)
April 18, 1906	7.8	39 (16.2)
July 1, 1911	6.6	57(50.4)
April 24, 1984	6.1	53 (48.0)
October 18, 1989	7.1	73 (47.4)

Note:
[1]USGS http://neic.usgs.gov/neis/epic/epic_circ.html

7.1.2. Faulting and Ground Surface Rupture

The numerous faults in northern California include active, potentially active, and inactive faults. As defined by the CGS, active faults are faults that have ruptured within Holocene time, or within approximately the last 11,000 years. Potentially active faults are those that show evidence of movement during Quaternary time (approximately the last 1.6 million years) but for which evidence of Holocene movement has not been established. Inactive faults do not show evidence of movement within Quaternary time.

The site is not located within an Alquist-Priolo Fault Rupture Hazard Zone established by the state geologist (California Division of Mines and Geology [CDMG], 1982) to delineate regions of potential ground surface rupture adjacent to active faults. The closest known active fault is the Hayward Fault located approximately 0.85 miles (1.37 kilometers) east of the project site. Major known active faults in the region consist generally of en-echelon, northwest-striking, right-lateral, strike-slip faults. These include the Calaveras, Hayward, and Concord/Green Valley faults, located east of the site, and the San Andreas Fault, located west of the site. The approximate locations of major faults in the region and their geographic relationship to the project vicinity are shown on Figure 5. Table 2 lists the seismic parameters for the principal active faults in the project vicinity. The values of fault to site distance, moment magnitude, and slip rate listed in the table were evaluated using FRISKSP (Blake, 2001) which is based upon the seismic data

published by the United States Geological Survey (USGS) and the CGS (Cao et al., 2003) with consideration for multi-segment events where noted.

Table 2 – Principal Active Faults

Fault	Approximate Fault to Site Distance[1] (km/miles)	Moment Magnitude,[1] (M_{max})	Slip Rate,[1] SR (mm/year)	Fault Type[2]
Hayward[3]	2.1/1.30	7.26	9	Strike Slip
Calaveras[4]	15.3/9.50	6.93	11	Strike Slip
Concord/Green Valley[5]	26.3/16.34	6.71	5	Strike Slip
San Andreas[6]	27.5/17.08	7.90	20	Strike Slip

Notes:
[1] Blake, 2001
[2] Per Cao et. al., 2003
[3] Includes Southern, Northern, and Rodgers Creek segments
[4] Includes Southern, Central, and Northern segments
[5] Includes Concord, Green Valley South, and Green Valley North segments
[6] Includes Southern, Peninsula, Northern, and Offshore segments

Based on our review of the referenced geologic maps, it is our opinion that the project site is not underlain by known active or potentially active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years and 1,600,000 years, respectively). Therefore, the potential for ground surface rupture because of faulting at the site is considered low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

7.1.3. Seismic Ground Motion

The 2010 CBC recommends that the design of structures be based on the horizontal PGA having a 2 percent probability of exceedance in 50 years which is defined as the Maximum Considered Earthquake (MCE). The statistical return period for PGA_{MCE} is approximately 2,475 years. The probabilistic PGA_{MCE} for the site was calculated as 0.751g using the USGS (USGS, 2011) ground motion calculator (web-based). The design PGA was estimated to be 0.501g using the USGS ground motion calculator.

7.1.4. Liquefaction and Strain Softening

The strong vibratory motions generated by earthquakes can trigger a rapid loss of shear strength in saturated, loose, granular soil of low plasticity (liquefaction) or in wet, sensitive, cohesive soil (strain softening). Liquefaction and strain softening can result in a loss of foundation bearing capacity or lateral spreading of sloping or unconfined ground. Liquefaction can also generate sand boils leading to subsidence at the ground surface.

The subject site is located within a liquefaction hazard zone on the Map of Seismic Hazard Zones (Figure 6) prepared by the CGS (CGS, 2012). Regional studies of liquefaction susceptibility (Witter et al., 2006) indicate that the liquefaction susceptibility at the site is moderate.

We encountered deposits of saturated, medium dense granular materials in our borings. We evaluated the liquefaction susceptibility of these deposits in accordance with the method presented by Youd et al. (2001) using the blow count data collected during our subsurface exploration and considering a design depth to groundwater of 20 feet and seismic event producing a PGA of 0.50g resulting from a Magnitude 6.8 earthquake (based upon our deaggregation analysis of the design PGA). The results of our analysis, presented in Appendix C, indicate that a layer of poorly graded sand with clay and gravel encountered at depth between 46½ to 50 feet below the existing grade in Boring B-2 will liquefy under the considered ground motion. Due to the depth of this layer, and findings of our subsurface exploration, it is our opinion that liquefaction will not impact the bearing capacity of shallow footings and the potential for sand boils on the site is negligible. Due to the relatively flat ground surface at the proposed site, we do not regard lateral spreading as a design consideration. The clay encountered during our subsurface exploration is not known to be particularly sensitive. Therefore we do not regard seismic strain-softening behavior of cohesive soils as a design consideration.

7.1.5. Dynamic Settlement

The strong vibratory motion associated with earthquakes can also dynamically compact loose granular soil leading to surficial settlements. Dynamic settlement is not limited to the near surface environment and may occur in both dry and saturated sand and silt. Cohesive soil is not typically susceptible to dynamic settlement. During our subsurface evaluation, we encountered medium dense to dense granular soil below groundwater. We evaluated the potential for dynamic settlement on site in accordance with the method presented by Tokimatsu and Seed (1987) for saturated sand using the blowcount data collected during our subsurface exploration and considering a magnitude 6.8 earthquake producing a PGA of 0.50g. The results of our analysis indicate that the proposed improvements may undergo dynamic settlement on the order of 1 inch (total) with a differential of almost ½ inch over a 40-foot lateral distance.

We anticipate that the proposed structures supported on shallow foundation systems can be designed to accommodate this degree of dynamic settlement.

7.1.6. Seismic Slope Stability

The subject site is not located within a landslide hazard zone on the map of Seismic Hazard Zones (Figure 6) prepared by the CGS (CGS, 2012). Seismic slope stability is further addressed in Section 7.2.

7.1.7. Tsunamis and Seiches

Tsunamis are long wavelength seismic sea waves (long compared to ocean depth) generated by the sudden movements of the ocean floor during submarine earthquakes, landslides, or volcanic activity. The project location is not within a tsunami evacuation area as shown on the Tsunami Evacuation Planning Map for Alameda County presented by the Association of Bay Area Governments (ABAG, 2009). Seiches are waves generated in a large enclosed body of water. Based on the inland location of the site and considering that there are no large enclosed bodies of water nearby, the potential for damage due to tsunamis or seiches is not a design consideration.

7.2. Landsliding and Slope Stability

Based on our background review, the site is not within a mapped landslide. The site and surrounding area is relatively flat. As such, we do not regard landsliding or slope stability as a design consideration.

7.3. Flood Hazards and Dam Inundation

Our review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FEMA, 2009) found that the site is in an area considered to be outside the 0.2% annual chance flood plain. ABAG Flood Hazard Area maps (ABAG, 2009) indicate that the site is located in an area considered to be an urbanized area. Based on review of the Dam Failure Inundation Areas prepared by the ABAGs (ABAG, 1995), the site is not located within an inundation area following a conjectured catastrophic dam failure.

7.4. Expansive Soil

Some clay minerals undergo volume changes upon wetting or drying. Unsaturated soil containing those minerals will shrink/swell with the removal/addition of water. The heaving pressures associated with this expansion can damage structures and flatwork. Laboratory testing was performed on two samples of the near-surface soil to evaluate the expansion index. The tests were performed in general accordance with the American Society of Testing and Materials (ASTM) Standard D 4829 (Expansion Index). The results of our two laboratory tests indicate that the expansion index of the samples tested ranged between 29 and 33. These results are indicative of a low expansion characteristic. The foundation recommendations and earthwork guidelines presented in Section 9 are provided with consideration for soil having a low expansion characteristic.

7.5. Unsuitable Materials

Fill materials that were not placed and compacted under the observation of a geotechnical engineer, or fill materials lacking documentation of such observation, are considered undocumented fill. Undocumented fill consisting of stiff to very stiff clay was encountered in

our exploratory borings to a depth of up to 4 feet below the existing grade. Deeper fills, however, may be present and should be planned for by the contractor.

The undocumented fill is unsuitable as subgrade material below the new footings. Excavations for new footings should be observed by the geotechnical consultant during construction. Recommendations for subgrade observation and remedial grading are presented in Section 9.1

7.6. Static Settlement

We understand that significant changes to the site grades are not proposed. We anticipate, therefore, that the static settlement of shallow foundations due to structural loads will be tolerable provided the recommendations presented in this report are followed. We estimate that the proposed structure, designed and constructed as recommended herein, will undergo total static settlement of less than 1 inch. Differential settlement can be assumed to be approximately ½ of the total or on the order of ½-inch over a horizontal span of 40 feet during the life of the structure.

7.7. Corrosive/Deleterious Soil

An evaluation of the corrosivity of the on-site materials was conducted to assess the impact to concrete and metals. The corrosion impact was evaluated using the results of limited laboratory testing on samples obtained during our subsurface study. Laboratory testing to quantify pH, resistivity, chloride, and soluble sulfate contents was performed on a sample of the fill. The results of the corrosivity tests are presented in Appendix B. California Department of Transportation (Caltrans) defines a corrosive environment as an area within 1,000 feet of brackish water or where the soil contains more than 500 parts per million (ppm) of chlorides, sulfates of 0.2 (2,000 ppm) percent or more, or pH of 5.5 or less (Caltrans, 2003). The site is not located within 1,000 feet of a brackish body of water. The criteria used to evaluate the deleterious nature of soil on concrete are listed in Table 3. Based on these criteria, the sample of material tested does not meet the definition of a corrosive environment but ferrous metals will undergo corrosion on site and the sulfate exposure to

concrete is negligible. Recommended corrosion mitigation measures are presented in Section 9.5.

Table 3 – Criteria for Deleterious Soil on Concrete

Sulfate Content Percent by Weight	Sulfate Exposure
0.0 to 0.1	Negligible
0.1 to 0.2	Moderate
0.2 to 2.0	Severe
> 2.0	Very Severe
Reference: American Concrete Institute (ACI) Committee 318 Table 4.3.1 (ACI, 2012)	

7.8. Excavation Characteristics

We anticipate that construction of the new Fire Station will involve excavations of up to about 4 feet in depth for utility trenches and for remedial grading. Our subsurface exploration encountered stiff to very stiff clay within the anticipated excavations. We anticipate that heavy earthmoving equipment in good working condition should be able to make the proposed excavations. Excavations may encounter obstructions consisting of debris, rubble, or over-sized materials in the fill.

Near-vertical cuts in these deposits up to 4 feet in depth should remain stable for a limited period of time. However, Sloughing of the materials exposed on the excavation sidewall may occur, particularly if the sidewall is disturbed during construction operations or exposed to water. Recommendations for excavation stabilization are presented in Section 9.

8. CONCLUSIONS

Based on our review of the referenced background data, our geologic field reconnaissance, subsurface evaluation, and laboratory testing, it is our opinion that construction of the proposed Fire Station is feasible from a geotechnical standpoint. Geotechnical considerations include the following:

- Undocumented fill soil was encountered in our boring to depths of up to approximately 4 feet below the ground surface at the site. Recommendations for remedial grading under slabs, flatwork, and footings are presented to mitigate the variable support characteristics of undocumented fill and resulting potential for differential settlement.
- The site is not located within a mapped Fault Hazard Zone or Earthquake-Induced Landslide Hazard Zone established by the state geologist. However, site is located within a Liquefaction Hazard Zone.
- The site could experience a relatively large degree of ground shaking during a significant earthquake on a nearby fault.
- During our subsurface exploration, we encountered saturated granular soils at depths between 46½ and 50 feet below the ground surface that could liquefy during a significant seismic event. We anticipate that the site may undergo dynamic settlement following a significant earthquake. Our analysis indicated that the total dynamic settlement will be about 1 inch and the differential dynamic settlement will be about ½ inch over a lateral distance of 40 feet under the design ground motion. Due to the depth of liquefiable soil, we anticipate that liquefaction will not impact the bearing capacity of shallow footings.
- The earth materials underlying the site should be excavatable with conventional earth moving equipment in good working condition. However, debris and rubble may be encountered in on-site fill materials. Near-vertical excavations in granular materials should be considered unstable. Recommendations for excavation stabilization are presented in the following sections of the report.
- Expansion Index testing indicates that the soil on site has a low expansion characteristic.
- Based on the results of our limited soil corrosivity tests during this study and Caltrans corrosion guidelines (2003), the site does not meet the definition of a corrosive environment.

9. RECOMMENDATIONS

The following guidelines should be used in the preparation of the construction plans. We recommend that the project plans and specifications be reviewed by Ninyo & Moore prior to construction bidding to check for consistency with these recommendations.

9.1. Earthwork

In general, earthwork at the site is anticipated to consist of clearing, removal of unsuitable materials, grading to reach planned finish grades including compaction of subgrade materials and compaction of engineered fill, excavation for structure foundations, and installation of underground utilities and trench backfill. Earthwork should be performed in accordance

with the requirements of applicable governing agencies and the recommendations presented below.

9.1.1. Pre-Construction Conference

We recommend that a pre-construction conference be held to discuss the grading recommendations presented in this report. The district and/or their representative, the project inspector, the civil engineer, Ninyo & Moore, and the contractor should be in attendance to discuss the work plan, project schedule, and earthwork requirements.

9.1.2. Site Preparation

Site preparation should begin with the removal of vegetation, utility lines, asphalt, concrete, debris and other deleterious materials from areas to be graded. Tree stumps and roots should be re6moved to such a depth that organic material is generally not present. Clearing and grubbing should extend to the outside of the proposed excavation and fill areas. The debris and unsuitable material generated during clearing and grubbing should be removed from areas to be graded and disposed of at a legal dumpsite away from the project area. Existing utilities within the project limits that are to remain in service should be re-routed, or protected from damage. Abandoned utilities should be removed. Excavations resulting from removal of buried utilities or obstructions should be backfilled with compacted fill.

9.1.3. Observation, Removals, and Remedial Grading

Prior to placement of fill, or the erection of forms, the client should request an evaluation of the exposed subgrade by Ninyo & Moore. Materials that are considered unsuitable shall be excavated under the observation of the geotechnical engineer in accordance with the recommendations in this section or the field recommendations of the geotechnical engineer.

Unsuitable materials include, but may not be limited to dry, loose, soft, wet, expansive, organic, or compressible natural soil; and undocumented or otherwise deleterious fill

materials. Unsuitable materials should be removed from trench bottoms and below bearing surfaces to a depth at which suitable foundation subgrade, as evaluated in the field by the geotechnical engineer, is exposed.

Undocumented fill was encountered during our subsurface exploration to depths of about 4 feet below the existing grade and these undocumented fill materials are considered unsuitable as bearing material beneath shallow spread footings and slabs. Recommendations for removal and replacement of these materials are presented in the following section of this report.

9.1.3.1. Remedial Grading for Undocumented Fill

We anticipate that the new Fire Station will be supported on shallow footings with interior slab-on-grade floors. Remedial grading will be needed to mitigate the variable support characteristics of the undocumented fill underlying concrete slabs and footings. Remedial excavations and grading should be observed by Ninyo & Moore.

The existing undocumented fill should be removed from below building footings. Remedial excavations should extend into competent native soil and the width of the excavations should not be less than the width of the footings. Remedial excavations below footings that are cleaned of loose spoils and expose suitable bearing materials, as evaluated by the geotechnical engineer in the field, may be backfilled with Controlled Low-Strength Material (CLSM) to the footing bearing elevation. The CLSM should conform with the recommendations of American Concrete Institute (ACI) Committee 229 (ACI, 2012) and have an unconfined compressive strength of approximately 50 to 150 pounds per square inch at 28 days when evaluated by ASTM D 4832.

For planning purposes a 4-foot depth of removal below the existing grade is anticipated for the construction of Fire Station. However, the remedial excavations

should be observed by the geotechnical engineer and the depth of removal below may be revised based on the observed conditions.

Undocumented fill should be removed from below building slabs to a depth of 18 inches below bottom of slab. The resulting excavation should be backfilled with engineered fill that meets the criteria listed in Section 9.1.4. In general, the materials removed from the remedial excavations should be suitable for reuse as engineered fill, provided that the material is screened for rocks or lumps in excess of 6 inches in diameter, trash, debris, roots, vegetation, or deleterious materials. Prior to placement of backfill, the exposed subgrade should be scarified to a depth of 6 inches, moisture conditioned as needed to achieve a moisture content at of above the optimum, and compacted as recommended in Section 9.1.7. The backfill should be placed and compacted in accordance with the recommendations in Section 9.1.7. Scarification below the zone of engineered fill may be omitted and depth of removals below slabs may be reduced where chemical treatment of the existing subgrade using lime or cement is performed provided that the bottom lift of chemically treated soil is mixed-in-place and extends to 18 inches below bottom of slab.

The location and extent of the remedial grading should be illustrated on the grading plans and applicable details to reduce the potential that these remedial grading recommendations are overlooked or misinterpreted during the bidding process. A schematic illustration of the remedial grading recommendations is presented as Figure 7.

9.1.4. Materials for Fill

Materials used during earthwork, grading, and paving operations should comply with the requirements listed in Table 4. Materials should be evaluated by the geotechnical consultant for suitability prior to use. The contractor should notify the geotechnical consultant 72 hours prior to import of materials or use of on-site materials to permit time for sampling, testing, and evaluation of the proposed materials. On-site materials may

need to be dried out before re-use as fill. The contractor should be responsible for the uniformity of import material brought to the site.

Table 4 – Recommended Material Requirements

Material and Use	Source	Requirements[1,2,3]
Engineered Fill - Below building slabs, flat-work, and uses not otherwise specified	Import	Expansion Index of 50 or less
	On-site borrow	No additional requirements[1]
Engineered Fill - Below footings	Import	CLSM with 28-day compressive strength of 50 to 150 psi
Aggregate Base for pave-ments	Import	Class II; CSS[4] Section 26-1.02
Asphalt Concrete for pave-ments	Import	Type A; CSS[4] Section 39-2
Permeable Aggregate - capillary break gravel	Import	Open-graded, clean, compactable crushed rock or angular gravel; nominal size ¾" or less
Vapor Retarding Membrane	Import	10 mil, Class A plastic membrane as per ASTM E 1745
Pipe/Conduit Bedding and Pipe Zone Material -material below conduit in-vert to 12" above conduit	Import	90 to 100 percent (by mass) should pass No. 4 sieve, and 5 percent or less should pass No. 200 sieve
Trench Backfill - above bedding material	Import or on-site bor-row	Free from rock/lumps in excess of 4" diameter or 2" diameter in top 12"

Notes:

[1] In general, fill should be free of rocks or lumps in excess of 6-inches diameter, trash, debris, roots, vegetation or other deleterious material.

[2] In general, import fill should be tested or documented to be non-corrosive[3] and free from hazardous materials in concentrations above levels of concern.

[3] Non-corrosive as defined by the Corrosion Guidelines version 1.0 (Caltrans, 2003).

[4] CSS is California Standard Specifications (Caltrans, 2010)

9.1.5. Lime/Cement Soil Treatment

The pavement subgrade may be chemically treated with lime, cement, or a combination of lime and cement to improve the support characteristics and permit a reduction in the

pavement section. Chemical treatment consisting of mixing a quicklime stabilizing agent conforming to ASTM standard C977 with on-site soil at a rate of 5 percent by dry weight of soil may be assumed for project planning purposes. The chemical stabilizing agent and rate of application should be re-evaluated during construction based on current moisture conditions. Trial mix testing may be needed to check that the design R-value of 40 and an unconfined compressive strength of 300 pounds per square inch can be obtained for the treated soil.

The chemical treatment should be performed by an experienced specialty contractor. The quicklime stabilizing agent should be evenly spread in dry form using a mechanical spreader and then mixed into the subgrade to the design depth as recommended in Section 9.5 utilizing a mechanical mixing device to provide a consistent distribution of the agent throughout the treatment area. The mechanical mixer should be equipped with a rotary cutting/mixing assembly, grade checker, and an automatic water distribution system. The treated soil shall be mixed while introducing water into the soil, as needed, through a metering/pump system to achieve a moisture content of approximately 4 percent over the optimum of the untreated soil as evaluated by ASTM D1557. Precautions to reduce the potential for dusting of stabilizing agent, such as scheduling or suspending operations to avoid windy weather, should be taken. Casting or tailgating of dry stabilizing agent should not be permitted. After a mellowing period of 16 hours or more, the treated soil should be remixed and moisture conditioned, as needed, and then compacted within 7 days of initial treatment.

Mixing or spreading operations should not be performed during inclement weather or when the ambient temperature is less than 35 degrees Fahrenheit. Mixing of stabilizing agent and subgrade soil should continue until the treated material does not contain untreated soil clods larger than 1 inch and the quantity of untreated soil clods retained on the No. 4 sieve is less than 40 percent of the dry soil mass. Quicklime treated materials should be compacted to 95 percent of the reference density as evaluated by ASTM

D1557 on a wet density basis. To reduce potential for deterioration of the stabilized subgrade, the surface should be covered with AB within 3 days of compaction.

9.1.6. Subgrade Preparation

Subgrade in trenches and below slabs, footings, pavements, or fill, should be prepared as per the recommendations in Table 5. Prepared subgrade should be maintained in a moist (but not saturated) condition by the periodic sprinkling of water prior to placement of additional overlying fill or construction of footings and slabs. Subgrade that has been permitted to dry out and loosen or develop desiccation cracking, should be scarified, moisture conditioned, and recompacted as per the requirements above.

Table 5 – Subgrade Preparation Recommendations

Subgrade Location	Preparation Recommendations
Utility trenches	• Check for unsuitable materials as per Section 9.1.3. • Do not scarify. Remove or compact loose/soft material.
Below footings	• Remove undocumented fill as per Section 9.1.3. • Check for suitable bearing materials • Do not scarify. Remove or compact loose/soft material. • Backfill with CLSM to bearing elevation.
Below building slabs supported on grade	• Remove undocumented fill to 18 inches below slab as per Section 9.1.3 • Scarify top 6” then moisture condition and compact as per Section 9.1.7. • Keep in moist condition by sprinkling water.
Below fill, pavements and exterior flatwork	• Check for unsuitable materials as per Section 9.1.3 • Scarify top 6” then moisture condition and compact as per Section 9.1.7. • Keep in moist condition by sprinkling water.

9.1.7. Fill Placement and Compaction

Fill and backfill should be compacted in horizontal lifts in conformance with the recommendations presented in Table 6. The allowable uncompacted thickness of each lift of fill depends on the type of compaction equipment utilized, but generally should not exceed 8 inches in loose thickness.

Table 6 – Recommended Compaction Requirements

Fill Type	Location	Recommended Compacted Density[1]	Recommended Compacted Moisture[2]
Subgrade	Below fill and walkways	90 percent	At or above optimum
	Below sidewalks and pavements	95 percent	At or above optimum
Lime Treated Subgrade	Below pavements	95 percent	At or above optimum
Bedding and Pipe Zone Fill	Material below invert to 12" above pipe or conduit	90 percent	At or above optimum
Trench Backfill	Top 2 feet below sidewalks, and pavements	95 percent	At or above optimum
	In locations not already specified	90 percent	At or above optimum
Engineered Fill	Top 2 feet below sidewalks and pavements	95 percent	At or above optimum
	In locations not already specified	90 percent	At or above optimum
Aggregate Base	Pavement Section	95 percent	At or near optimum
Asphalt Concrete	Pavement Section	95 percent	Not Applicable

Notes:

[1] Expressed as percent relative compaction or ratio of field density to reference density (typically on a dry density basis for soil and aggregate and on a wet density basis for asphalt concrete and lime-treated soil). The reference density of soil and aggregate should be evaluated by ASTM D 1557. The reference density of asphalt concrete should be evaluated by California Test Method 304.

[2] Optimum moisture should be evaluated by latest version of ASTM D 1557.

Compacted fill should be maintained in a moist (but not saturated) condition by the periodic sprinkling of water prior to placement of additional overlying fill or construction of footings and slabs. Fill that has been permitted to dry out and loosen or develop desiccation cracking, should be scarified, moisture conditioned, and recompacted as per the requirements above.

9.1.8. Temporary Excavations and Shoring

Excavations, including footing, trench, and remedial excavations, shall be stabilized in accordance with the Excavation Rules and Regulations (29 Code of Federal Regulations [CFR], Part 1926) stipulated by the Occupational Safety and Health Administration (OSHA). Stabilization shall consist of shoring sidewalls or laying slopes back.

Dewatering pits or sumps should be used to depress the groundwater level (if encountered) below the bottom of the excavation. Table 7 lists the OSHA material type classifications and corresponding allowable temporary slope layback inclinations for soil deposits that may be encountered on site. Alternatively, an internally-braced shoring system or trench shield conforming to the OSHA Excavation Rules and Regulations (29 CFR, Part 1926) may be used to stabilize excavation sidewalls during construction. Shoring system criteria for excavations up to 20 feet in depth are listed in the OSHA Excavation Rules and Regulations (29 CFR, Part 1926). The lateral earth pressures listed in Table 7 may be used to design or select the internally-braced shoring system or trench shield. The recommendations listed in this table are based upon the limited subsurface data provided by our exploratory borings and reflect the influence of the environmental conditions that existed at the time of our exploration. Excavation stability, material classifications, allowable slopes, and shoring pressures should be re-evaluated and revised, as needed, during construction. Excavations, shoring systems and the surrounding areas should be evaluated daily by a competent person for indications of possible instability or collapse.

Table 7 – OSHA Material Classifications and Allowable Slopes

Formation	OSHA Classification	Allowable Temporary Slope[1,2,3]	Lateral Earth Pressure on Shoring[4] (psf)
Cohesive Fill & Alluvium (above groundwater)	Type B	1 h:1v (45°)	45·D + 72

Notes:

1 Allowable slope for excavations less than 20 feet deep. Excavation sidewalls in cohesive soil may be benched to meet the allowable slope criteria (measured from the bottom edge of the excavation). The allowable bench height is 4 feet. The bench at the bottom of the excavation may protrude above the allowable slope criteria.

2 In layered soil, layers shall not be sloped steeper than the layer below.

3 Temporary excavations less than 5 feet deep may be made with vertical side slopes and remain unshored if judged to be stable by a competent person (29 CFR, Part 1926.650).

4 'D' is depth of excavation for excavations up to 20 feet deep. Includes a surface surcharge equivalent to two feet of soil.

The shoring system should be designed or selected by a suitably qualified individual or specialty subcontractor. The shoring parameters presented in this report are preliminary design criteria, and the designer should evaluate the adequacy of these parameters and make appropriate modifications for their design. We recommend that the contractor take appropriate measures to protect workers. OSHA requirements pertaining to worker safety should be observed.

Excavations made in close proximity to existing structures may undermine the foundation of those structures and/or cause soil movement related distress to the existing structures. Stabilization techniques for excavations in close proximity to existing structures will need to account for the additional loads imposed on the shoring system and appropriate setback distances for temporary slopes. The geotechnical engineer should be consulted for additional recommendations if the proposed excavations cross below a plane extending down and away from the foundation bearing surfaces of the adjacent structure at an angle of 1:1 (horizontal to vertical).

9.1.9. Utility Trenches

Trenches constructed for the installation of underground utilities should be stabilized in accordance with our recommendations in Section 9.1.8. Utility trenches should be back-

filled with materials that conform to our recommendations in Section 9.1.4. Trench backfill, bedding, and pipe zone fill should be compacted in accordance with Section 9.1.7 of this report. Bedding and pipe zone fill should be shoveled under pipe haunches and compacted by manual or mechanical, hand-held tampers. Trench backfill should be compacted by mechanical means. Densification of trench backfill by flooding or jetting should not be permitted.

To reduce potential for moisture intrusion into the building envelope, we recommend plugging utility trenches at locations where the trench excavations cross under the building perimeter. The trench plug should be constructed of a compacted, fine-grained, cohesive soil that fills the cross-sectional area of the trench for a distance equivalent to the depth of the excavation. Alternatively, the plug may be constructed of concrete or cement-sand slurry.

9.1.10. Rainy Weather Considerations

We recommend that the construction be performed during the period between approximately April 15 and October 15 to avoid the rainy season. In the event that grading is performed during the rainy season, the plans for the project should be supplemented to include a stormwater management plan prepared in accordance with the requirements of the relevant agency having jurisdiction. The plan should include details of measures to protect the subject property and adjoining off-site properties from damage by erosion, flooding or the deposition of mud, debris, or construction-related pollutants, which may originate from the site or result from the grading operation. The protective measures should be installed by the commencement of grading, or prior to the start of the rainy season. The protective measures should be maintained in good working order unless the project drainage system is installed by that date and approval has been granted by the building official to remove the temporary devices.

In addition, construction activities performed during rainy weather may impact the stability of excavation subgrade and exposed ground. Temporary swales should be

constructed to divert surface runoff away from excavations and slopes. Steep temporary slopes should be covered with plastic sheeting during significant rains. The geotechnical consultant should be consulted for recommendations to stabilize the site as needed.

9.2. Foundations

The new Fire Station building may be supported on spread footings. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in design of the structures.

9.2.1. Spread Footings

Shallow footings, bearing at 24 inches below the adjacent grade on competent native soils or CLSM prepared in accordance with our recommendations may be designed for an allowable bearing capacity of 3,000 pounds per square foot (psf) presuming a 24-inch width for column footings and an 18-inch width for wall footings. Recommendations for remedial grading to remove undocumented fill are provided in Section 9.1.3.1. A representative of the geotechnical engineer should observe footing excavations for bearing materials and cleaning prior to backfill or placement of reinforcing steel. Structures supported on footings consistent with these recommendations should be designed for total and differential settlements 1 and ½ inch, respectively, over a horizontal distance of 40 feet

Allowable bearing capacities may be increased by one-third when considering loads of short duration such as wind or seismic forces. A factor of safety of 3 was used in deriving the allowable bearing capacity from the ultimate (i.e., the ultimate bearing capacities would be three times the allowable values recommended here).

The spread footings should be reinforced in accordance with the recommendations of the project structural engineer. Where footings are located adjacent to utility trenches or other excavations, the footing bearing surfaces should bear below an imaginary plane

extending upward from the bottom edge of the adjacent trench/excavation at a 1:1 angle. Footings should be deepened or excavation depths reduced as needed.

A lateral bearing pressure of 300 psf per foot of depth up to 1,500 psf may be used to evaluate the resistance of footings to lateral loads. This value assumes that the ground is horizontal for a distance of 10 feet, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance. The lateral bearing pressure may be increased by one-third when considering loads of short duration such as wind or seismic forces.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil or CLSM and concrete. This also should be assumed for concrete slabs-on-grade.

9.2.2. Slabs-on-Grade

Building floor slabs should be designed by the project structural engineer based on the anticipated loading conditions. Recommendations for slabs subject to vehicular traffic are provided in Section 9.5.2. Building floor slabs should be supported by engineered fill prepared in accordance with the recommendations presented in this report. The slab should be reinforced with deformed steel bars. We recommend that masonry briquettes or plastic chairs be used to aid in the correct placement of slab reinforcement. Refer to Section 9.6 for the recommended concrete cover over reinforcing steel. A vapor retarder is recommended in areas where moisture-sensitive floor coverings are anticipated. See Section 9.7 for vapor retarding system recommendations. Joints should be constructed at intervals designed by the structural engineer to help reduce random cracking of the slab.

9.3. Exterior Flatwork

Pedestrian sidewalks (adjacent to pavements) and walkways (removed from pavements carrying vehicular traffic) constructed of Portland cement concrete should consist of 4 inches of

concrete over 6 inches of AB. The concrete thickness should be increased to 6 inches at driveways. These sections presume that the subgrade is prepared in accordance with our recommendations in Section 9.1.6. AB sections for walkways and sidewalks should conform to and be compacted in accordance with our recommendations in Sections 9.1.4 and 9.1.7, respectively.

Portland cement concrete sidewalks and walkways should be appropriately jointed to reduce the random occurrence of cracks. Joints should be laid out in a square pattern at consistent intervals. Contraction, construction, and isolation joints should be detailed and constructed in accordance with the guidelines of ACI Committee 302 (MCP, 2012). We recommend spacing contraction joints at 8 feet, or less.

9.4. Seismic Design Considerations

Criteria for seismic design of new improvements on site in accordance with the CBC (CBSC, 2010) are presented in the following table. Spectral acceleration ordinates are presented in the table for the mapped MCE values with a recurrence interval of 2,500 years and assumed 5 percent damping (USGS, 2011). The spectral acceleration ordinates adjusted for site soil conditions and scaled for design with a factor of two-thirds are also presented.

Table 8 – 2010 California Building Code Seismic Design Criteria

Seismic Design Factors	Value
Site Class	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Mapped Spectral Acceleration at 0.2-second Period, S_s	1.877 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.713 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	1.877 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	1.070 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	1.251 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.713 g

9.5. Preliminary Pavement Design

Recommendations for flexible AC pavement and rigid concrete pavement are presented in the following sections.

9.5.1. AC Pavement

Ninyo & Moore conducted a preliminary analysis to evaluate appropriate asphalt pavement structural sections following the methodology presented in Section 600 of the Highway Design Manual (Caltrans, 2009). Alternative sections consisting of AC and AB and AC, AB, and lime treated subgrade (LTS) were evaluated. The pavement sections were designed for a traffic index of 5 (for visitor/staff parking areas) and 8 (for truck lanes) consistent with the criteria provided by the civil engineer. A design R-value of 8 was selected for the subgrade based upon our laboratory testing of samples from our subsurface evaluation. A design R-value of 40 was selected for lime stabilized subgrade. Design values assumed in the preliminary analysis should be checked by additional testing performed during construction, and the pavement section should be modified as appropriate.

The 20-year service life presumes that periodic maintenance, including crack sealing and resurfacing will be performed during the service life of the pavement. Premature deterioration may occur without periodic maintenance. Our preliminary recommendations for the pavement sections are presented in Table 9. Recommendations for subgrade preparation and lime subgrade stabilization are presented in Sections 9.1.6 and 9.1.5, respectively. Edge subdrains consistent with our recommendations in Section 9.5.3 should be constructed to reduce potential for premature deterioration due to poor drainage.

Table 9 – Preliminary Asphalt Pavement Structural Sections

Alternative	Design Traffic Index	Asphalt Concrete[1]	Aggregate Base[2]	Lime Treated Subgrade[3]
A1 (Visitor/staff parking)	5	3 inches	10 inches	--
A2 (Visitor/staff parking)	5	3 inches	6 inches	12 inches
B1 (Fire truck lanes)	8	5 inches	18 inches	--
B2 (Fire truck lanes)	8	5 inches	10 inches	12 inches

[1] AC is Type B, Dense Graded Asphalt Concrete complying with Caltrans Standard Specification 39-2 (2010).
[2] AB is Class II Aggregate Base complying with Caltrans Standard Specification 26-1.02 (2010).
[3] Design R-Value for lime -treated subgrade assumed to be 40.

AC, AB, and aggregate subbase should conform to the material recommendations made in Section 9.1.4 and should be placed and compacted in accordance with the recommendations in Section 9.1.7.

9.5.2. Concrete Pavement

The proposed Fire Station may include rigid concrete pavements for the fire truck lanes and the apparatus bay. We recommend using an 8-inch thick concrete slab over 18 inches of AB for the proposed pavement. Alternatively, the 8-inch thick slab may be constructed over 6 inches of AB on 12 inches of lime-treated subgrade. These sections are suitable for a traffic index of 8 with a 40-year design life presuming that the pavement is restrained against lateral movement by perimeter curbs, adjacent pavements or foundations. Recommendations for subgrade preparation and lime subgrade stabilization are presented in Sections 9.1.6 and 9.1.5, respectively. The AB should conform to and be compacted in accordance with our recommendations in Sections 9.1.4 and 9.1.7, respectively. The concrete should have a compressive strength at 28-days of 5,000 pounds per square inch. Additional concrete recommendations are provided in Section 9.6.

Appropriate jointing of the concrete pavement can reduce the random occurrence of cracks. Joints should be laid out in a regular square pattern. Contraction, construction, and isolation joints should be detailed and constructed in accordance with the guidelines of ACI Committee 302 (Manual of Concrete Practice [MCP], 2012). We recommend spacing contraction joints at 15 feet apart or less. Contraction joints within 30 feet of an edge not confined by a curb or adjacent slab should be reinforced with a smooth, 1-inch diameter, 18-inch long dowel placed across the joint near the middle of the slab spaced at 12 inches on center. Isolation joints subject to traffic loading should be thickened to 10 inches. The thickened section should taper to the nominal slab thickness over a distance of 7 feet. Construction joints subject to traffic loading should be reinforced with smooth dowels as for contraction joints. Construction joints within the middle third of the typical joint spacing pattern should be reinforced with 16-inch long, No. 3 deformed steel bars placed across the joint near the middle of the slab and spaced at 22 inches on center.

To reduce the potential for slab movement where cracks form away from joints, the slab should be reinforced with No. 4 deformed steel bars spaced at approximately 12 inches on center both ways. Masonry briquettes or plastic chairs should be used to aid in the correct placement of slab reinforcement near mid-height. This reinforcing steel should not cross the contraction joints.

9.5.3. Pavement Drainage

To improve drainage and reduce the potential for premature deterioration of pavement, we recommend that edge subdrains be constructed. The edge subdrains should consist of slotted, stiff, plastic collector pipe encapsulated by ¾-inch, open-graded, crushed rock wrapped with filter fabric (Mirafi 140N, or equivalent) in a 12-inch-wide trench. The edge subdrains should be constructed against the AB section of the pavement. The wrapped crushed rock should be capped by a relatively impervious layer such as a paved shoulder, concrete gutter, or 6 inches of compacted clay. The collector pipe should be 12 inches or more below the finish subgrade elevation. Alternatively, geo-

composite drainage panels (Contech Stripdrain 100, or equivalent) may be placed vertically in a narrow trench (against the outside wall) backfilled with AB. Unslotted plastic outlet pipes, suitably sloped, should be provided at appropriate intervals to drain and dispose of accumulated water. Outlet pipe trenches should be backfilled with material of low permeability or include cut-off walls/diaphragms to reduce potential for piping. Vents and cleanouts should be provided at suitable intervals to promote free drainage and maintenance.

9.6. Concrete

Laboratory testing indicated that the concentration of sulfate and corresponding potential for sulfate attack on concrete is negligible for the soil tested. However, due to the variability in the on-site soil and the potential future use of reclaimed water at the site, we recommend that Type II/V or Type V cement be used for concrete structures in contact with soil. In addition, we recommend a water-to-cement ratio of no more than 0.45. A 3-inch thick, or thicker, concrete cover should be maintained over reinforcing steel where concrete is in contact with soil in accordance with Section 7.7 of ACI Concrete Institute (ACI) Committee 318 (ACI, 2012).

9.7. Moisture Vapor Retarder

The migration of moisture through slabs underlying enclosed spaces or overlain by moisture sensitive floor coverings should be discouraged by providing a moisture vapor retarding system between the subgrade soil and the bottom of slabs. We recommend that the moisture vapor retarding system consist of a 4-inch-thick capillary break, overlain by a plastic membrane 15-mil-thick. The capillary break should be constructed of clean, compacted, open-graded crushed rock or angular gravel of ¾-inch nominal size. An optional 2-inch thick blotter sand layer may be placed over the plastic membrane. The blotter sand should be in a moist but not saturated condition prior to concrete placement. If the blotter sand layer is omitted; to reduce the potential for slab curling and cracking, an appropriate concrete mix with low shrinkage characteristics and a low water-to-cementitious-materials ratio should be

specified. In addition, the concrete should be delivered and placed in accordance with ASTM C94 with attention to concrete temperature and elapsed time from batching to placement, and the slab should be cured in accordance with Section 302.1, 305, or 306 of the MCP (ACI, 2012), as appropriate. The plastic membrane should conform to the requirements in the latest version of ASTM Standard E 1745 for a Class A membrane. The bottom of the moisture barrier system should be higher in elevation than the exterior grade, if possible. Positive drainage should be established and maintained adjacent to foundations and flatwork. If a moisture vapor retarding system is to be constructed below an interior slab subject to vehicular loading, the blotter sand layer should be omitted or replaced with CLSM to reduce potential for slab pumping under load.

Where the exterior grade is at a higher elevation than the moisture vapor retarding system (including the capillary break layer), consideration should be given to constructing a subdrain around the foundation perimeter. The subdrain should consist of ¾-inch crushed rock wrapped in filter fabric (Mirafi 140N, or equivalent). The subdrain should be capped by a pavement or 12 inches of native soil and drained by a perforated pipe (Schedule 40 polyvinyl chloride pipe, or similar). The pipe should be sloped at 1 percent or more to discharge at an appropriate outlet away from the foundation. The pipe should be located below the bottom elevation of the moisture vapor retarding system but above a plane extending down and away from the bottom edge of the foundation at a 2:1 (horizontal to vertical) gradient.

9.8. Drainage and Site Maintenance

Positive surface drainage should be provided to divert surface water and roof runoff away from foundations and off site. Downspouts should be connected to a closed drainage system to discharge at a suitable location 10 feet or more away from the foundations. Runoff should be diverted by the use of swales or pipes into a collective drainage system. Surface water should not be allowed to pond adjacent to footings or retaining walls, and drainage on the site should be provided so that water is not permitted to pond. A gradient of 2 percent or steeper should be maintained and drainage patterns should be established to divert and remove water from the site to appropriate outlets. Care should be taken by the contractor

during grading to preserve any berms, drainage terraces, interceptor swales or other drainage devices on or adjacent to the project site. Drainage patterns established at the time of grading should be maintained for the life of the project. Protective landscape cover should be maintained or provided over slopes to reduce the potential for erosion.

9.9. Review of Construction Plans

The recommendations provided in this report are based on preliminary design information for the proposed construction. We recommend that a copy of the plans be provided to Ninyo & Moore for review before bidding to check the interpretation of our recommendations and that the designed improvements are consistent with our assumptions. It should be noted that, upon review of these documents, some recommendations presented in this report might be revised or modified to meet the project requirements.

9.10. Construction Observation and Testing

The recommendations provided in this report are based on subsurface conditions encountered in relatively widely spaced exploratory borings. During construction, the geotechnical engineer or his representative in the field should be allowed to check the exposed subsurface conditions. During construction, the geotechnical engineer or his representative should be allowed to:

- Observe removal of unsuitable materials and remedial grading.
- Observe preparation and compaction of subgrade.
- Check and test imported materials prior to use as fill.
- Observe placement and compaction of fill.
- Perform field density tests to evaluate fill and subgrade compaction.
- Observe footing excavations for bearing materials and cleaning prior to placement of reinforcing steel and concrete.
- Observe placement of reinforcing steel in footings and slabs.
- Observe condition of water vapor retarding system prior to concrete placement.

The recommendations provided in this report assume that Ninyo & Moore will be retained as the geotechnical consultant during the construction phase of the project. If another geotechnical consultant is selected, we request that the selected consultant provide a letter to the architect and the owner (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore's recommendations, and that they are in full agreement with the recommendations contained in this report.

10. LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports

prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur because of government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

11. REFERENCES

American Concrete Institute, 2012, ACI Manual of Concrete Practice.

American Society for Testing and Materials (ASTM), 2012, Annual Book of ASTM Standards, West Conshohocken, Pennsylvania.

Association of Bay Area Governments, 1995, Bay Area Dam Failure Inundation Maps: http://www.abag.ca.gov/bayarea/eqmaps/damfailure/dfpickc.html

Association of Bay Area Governments (ABAG), 2009, Tsunami Evacuation Planning Map; available online at http://quake.abag.ca.gov.

Association of Bay Area Governments (ABAG), 2009, FEMA Flood Hazard Area Map; available online at http://quake.abag.ca.gov.

Blake, T.F., 2001, FRISKSP (Version 4.00), A Computer Program for the Probabilistic Estimation of Peak Acceleration and Uniform Hazard Spectra Using 3-D Faults as Earthquake Sources.

California Building Standards Commission (CBSC), 2010, California Building Code (CBC), Title 24, Part 2, Volumes 1 and 2, based upon the 2009 International Building Code (IBC).

California Department of Transportation (Caltrans), 2010, Standard Specifications: dated May.

California Department of Transportation (Caltrans), 2009, Highway Design Manual: dated July 24.

California Department of Transportation (Caltrans), 2003, Corrosion Guidelines, Version 1.0, Division of Engineering Services, Materials Engineering and Testing Services, Corrosion Technology Branch: dated September.

California Geological Survey, 2012, Earthquake Fault Zones and Seismic Hazard Zones for the Hayward 7.5-Minute Quadrangle, Alameda County, California.

California Division of Mines and Geology, 1982, State of California Special Studies Zones, Hayward Quadrangle: dated January 1: Scale 1:24,000.

California Geological Survey, 2003, Seismic Hazard Zone Report for the Hayward 7.5-Minute Quadrangle, Alameda County, California, Seismic Hazard Zone Report 091.

Cao, T., Bryant, W.A., Rowshandel, B., Branum, D., and Wills, C. J., 2003, The revised 2002 California Probabilistic Seismic Hazard Maps, California, USGS/CGS: dated June.

Department of Toxic Substances Control guidelines, 2001, Guidelines for Importation of Fill to School Sites.

Dibblee, T.W., Jr., 2005, Geologic Map of the Hayward Quadrangle, Contra Costa and Alameda Counties, California: Dibblee Geology Center Map, DF-163, Scale 1:24,000.

Federal Emergency Management Agency (FEMA), 2009, Flood Insurance Rate Map, City of Hayward, California, Panel 286 of 725, Community Parcel Number 06001C0286G, dated August 3.

Google Earth, 2012, Version No. 6.0.3.2197.

Graymer, R.W. et al., 2000, Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa and San Francisco Counties, California, United States Geological Survey, MF-2342, Scale 1:50,000.

Jennings, C.W. and Bryant, William A., 2010, Fault Activity Map of California and Adjacent Areas: California Division of Mines and Geology, California Geologic Data Map Series, Map No. 6, Scale 1:750,000.

Muller & Caulfield, 2011, 30% Schematic Site Plan, Cherryland Fire Station, dated August 29.

Occupational Safety and Health Administration (OSHA), 1989, Occupational Safety and Health Standards – Excavations, Department of Labor, Title 29 Code of Federal Regulations (CFR) part 1926, dated October 31.

Pradel, D. J., 1998, Procedure to Evaluate Earthquake Induced Settlements in Dry Sandy Soils, Journal of Geotechnical and Geoenvironmental Engineering, American Society of Civil Engineers, (ASCE), Volume 124, No. 4.

Sandis, 2011, Topographic Survey, Cherryland Fire Station, dated, August 15.

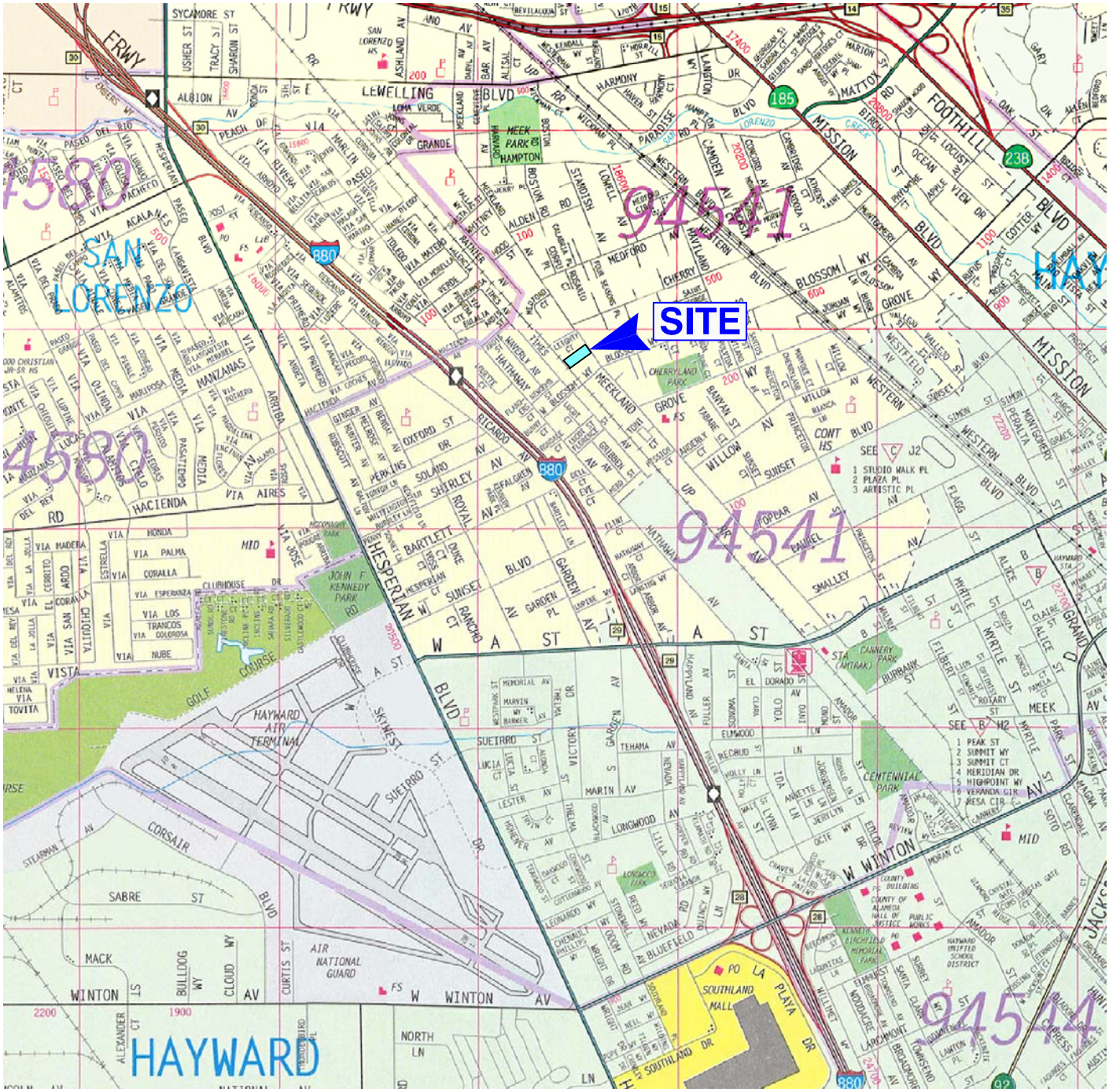
Tokimatsu, K., and Seed, H.B., 1987, Evaluation of Settlements in Sands Due to Earthquake Shaking, Journal of the Geotechnical Engineering Division, ASCE, Vol. 113, No. 8, pp. 861-878.

United States Geological Survey, 2011, Ground Motion Parameter Calculator v. 5.0.9a, World Wide Web, http://earthquake.usgs.gov/research/hazmaps/design/.

United States Geological Survey, 2012, Circular Area Earthquake Search, World Wide Web, http://earthquake.usgs.gov/earthquakes/eqarchives/epic/epic_circ.php.

Witter, Robert C., Knudsen, Keith L., Sowers, Janet M., Wentworth, Carl M., Koehler, Richard D., Randolph, Carolyn E., 2006, Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, Open-File Report 2006-1037, Version 1.1.

Youd, T.L., Idriss, I.M., Andrus, R.D., Arango, I., Castro, G., Christian, J.T., Dobry, R., Finn, W.D., Harder, L.F., Hynes, M.E., Ishihara, K., Koester, J.P., Liao, S.S.C., Marcuson, W.F., Martin, G.R., Mitchell, J.K., Moriwaki, Y., Power, M.S., Robertson, P.K., Seed, R.B., and Stokoe, K.H., II., 2001, Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils, Journal of Geotechnical and Geoenvironmental Engineering: American Society of Civil Engineering 124(10), p. 817-833.



REFERENCE: METRO AREAS OF ALAMEDA, CONTRA COSTA, MARIN, SAN FRANCISCO, SAN MATEO, AND SANTA CLARA COUNTIES, THOMAS GUIDE, 2008.

N

SCALE IN FEET

0 2,000 4,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore	SITE LOCATION	FIGURE
PROJECT NO. / DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	1
401811002 / 4/13		

401811002-SL.dwg, Apr 16, 2013, 4:36pm, snguyen

REFERENCE: GOOGLE EARTH IMAGERY, AUGUST 2012.

N

SCALE IN FEET

0 60 120

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND	
B-3	BORING LOCATION
TD=60'	TD=TOTAL DEPTH IN FEET

Ninyo & Moore		AERIAL PHOTOGRAPH	FIGURE
PROJECT NO.	DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	2
401811002	4/13		

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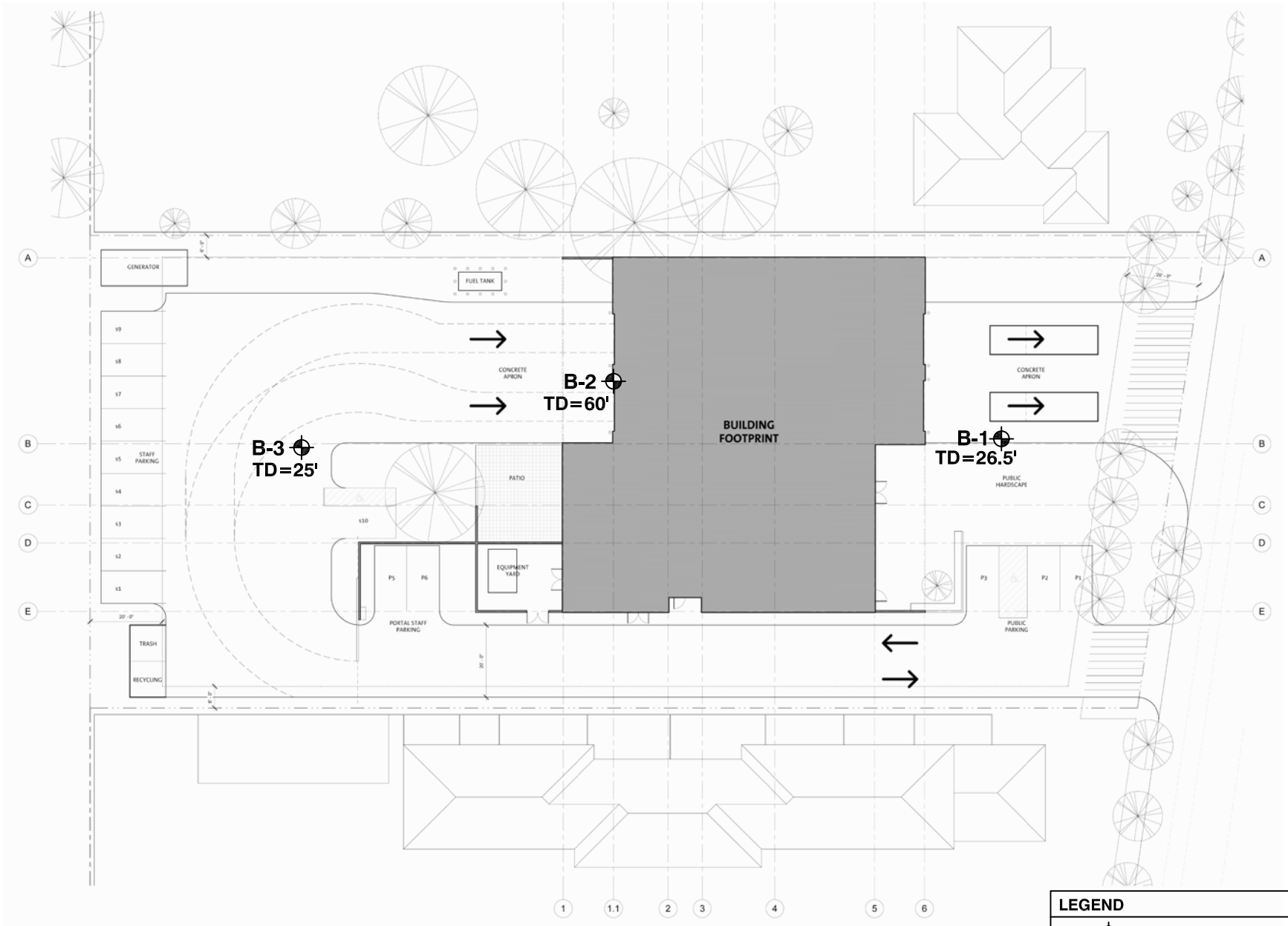

LEGEND

B-3 BORING LOCATION

TD=60' TD=TOTAL DEPTH IN FEET

N

SCALE IN FEET

0 40 80

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

REFERENCE: MULLER & CAULFIELD ARCHITECTS,, DRAWING NO. A1.1, AUGUST 2011.

Ninyo & Moore		SITE PLAN	FIGURE
PROJECT NO.	DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	3
401811002	4/13		

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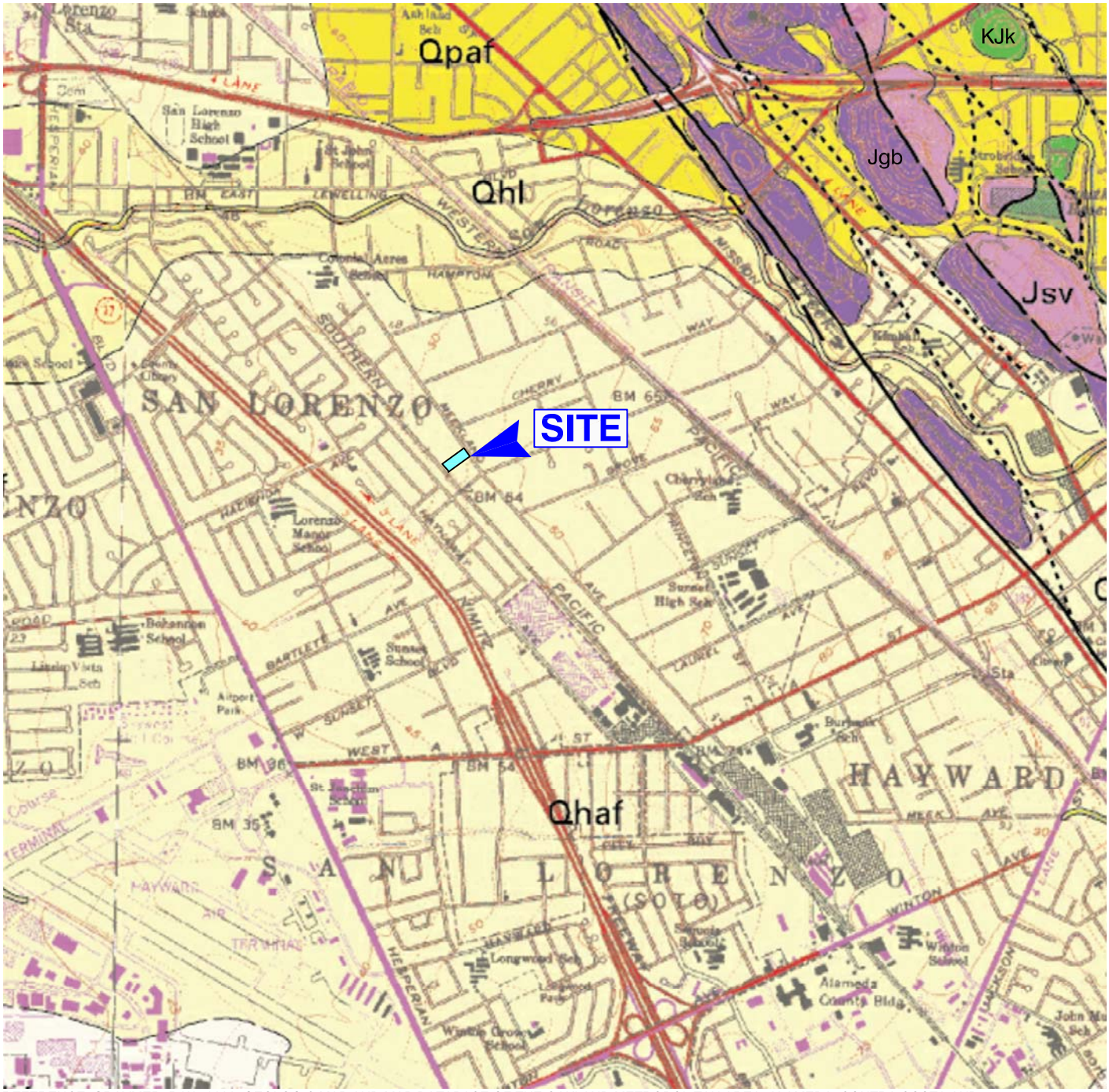


REFERENCE: GRAYMER, R.W., 2000, GEOLOGIC MAP AND MAP DATABASE OF THE OAKLAND METROPOLITAN AREA, ALAMEDA, CONTRA COSTA AND SAN FRANCISCO COUNTIES, CALIFORNIA, UNITED STATES GEOLOGICAL SURVEY, MF-2342, SCALE 1:50,000.

N

SCALE IN FEET

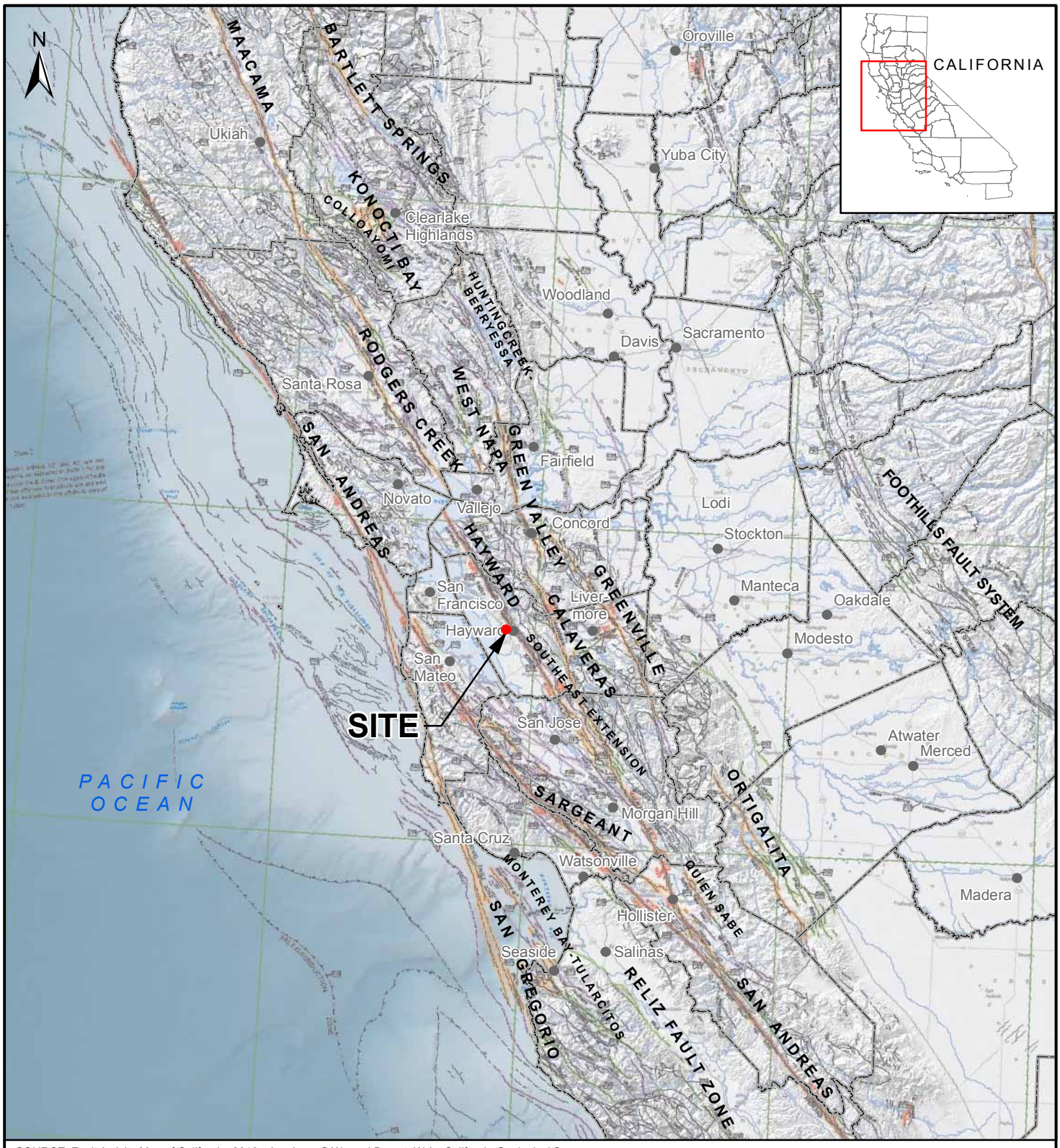
0 2,000 4,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

LEGEND	
Qhaf	Alluvial fan and fluvial deposits (Holocene)
Qhl	Natural levee deposits (Holocene)
Qpaf	Alluvial fan and fluvial deposits (Pleistocene)
KJk	Knoxville Formation (Early Cretaceous and Late Jurassic)
Jsv	Keratophyre and quartz keratophyre (Late Jurassic)
Jgb	Gabbro
	Geologic Contact
	Fault

Ninyo & Moore	REGIONAL GEOLOGY	FIGURE
PROJECT NO. 401811002 / DATE 4/13	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	4

401811002-RG.dwg, Apr 16, 2013, 4:41pm, SN



SOURCE: Fault Activity Map of California, 2010, Jennings, C.W., and Bryant, W.A., California Geological Survey.

APPROXIMATE SCALE

0 30 60 MILES

LEGEND

CALIFORNIA FAULT ACTIVITY

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- STATE/COUNTY BOUNDARY
- QUATERNARY (POTENTIALLY ACTIVE)
- LATE QUATERNARY (POTENTIALLY ACTIVE)

NOTES: ALL DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE

Ninyo & Moore

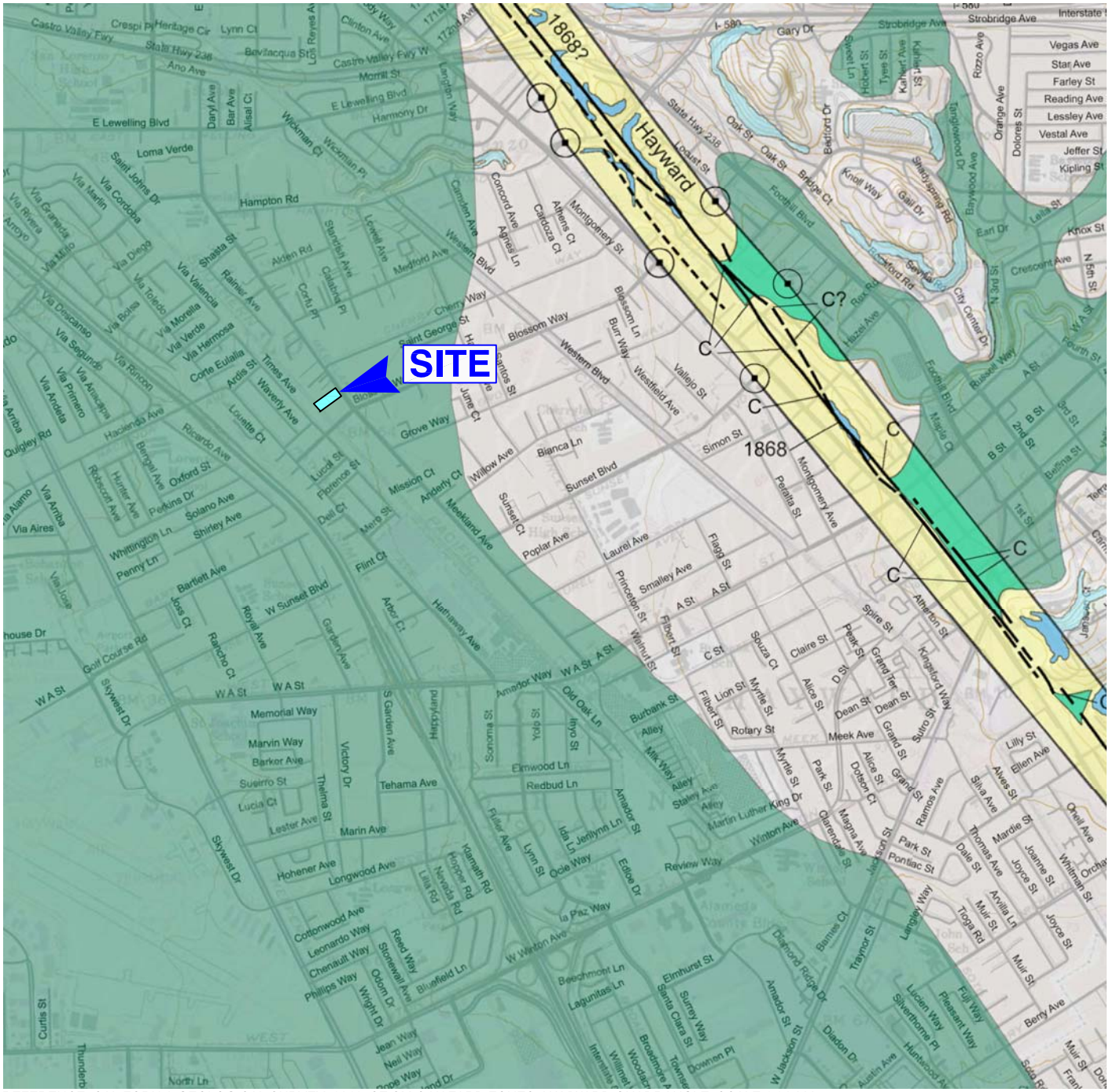
FAULT LOCATIONS

FIGURE 5

PROJECT NO.	DATE
401811002	4/13

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

C:\GIS\DATA\fault_loc_2010_OAK\fault_loc_2010_OAK_92.mxd



REFERENCE: CALIFORNIA GEOLOGICAL SURVEY, 2012, SEISMIC HAZARD ZONES, HAYWARD QUADRANGLE, SCALE 1:24,000.

N

SCALE IN FEET

0 2,000 4,000

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

MAP EXPLANATION

LIQUEFACTION:
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

EARTHQUAKE-INDUCED LANDSLIDES:
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

EARTHQUAKE FAULT ZONES:
Zones are areas delineated as straight-line segments that connect encircled turning points encompassing active faults that constitute a potential hazard to structures from surface faulting or fault creep such that avoidance as defined in Public Resources Code Section 2621.5(a) would be required.

Ninyo & Moore

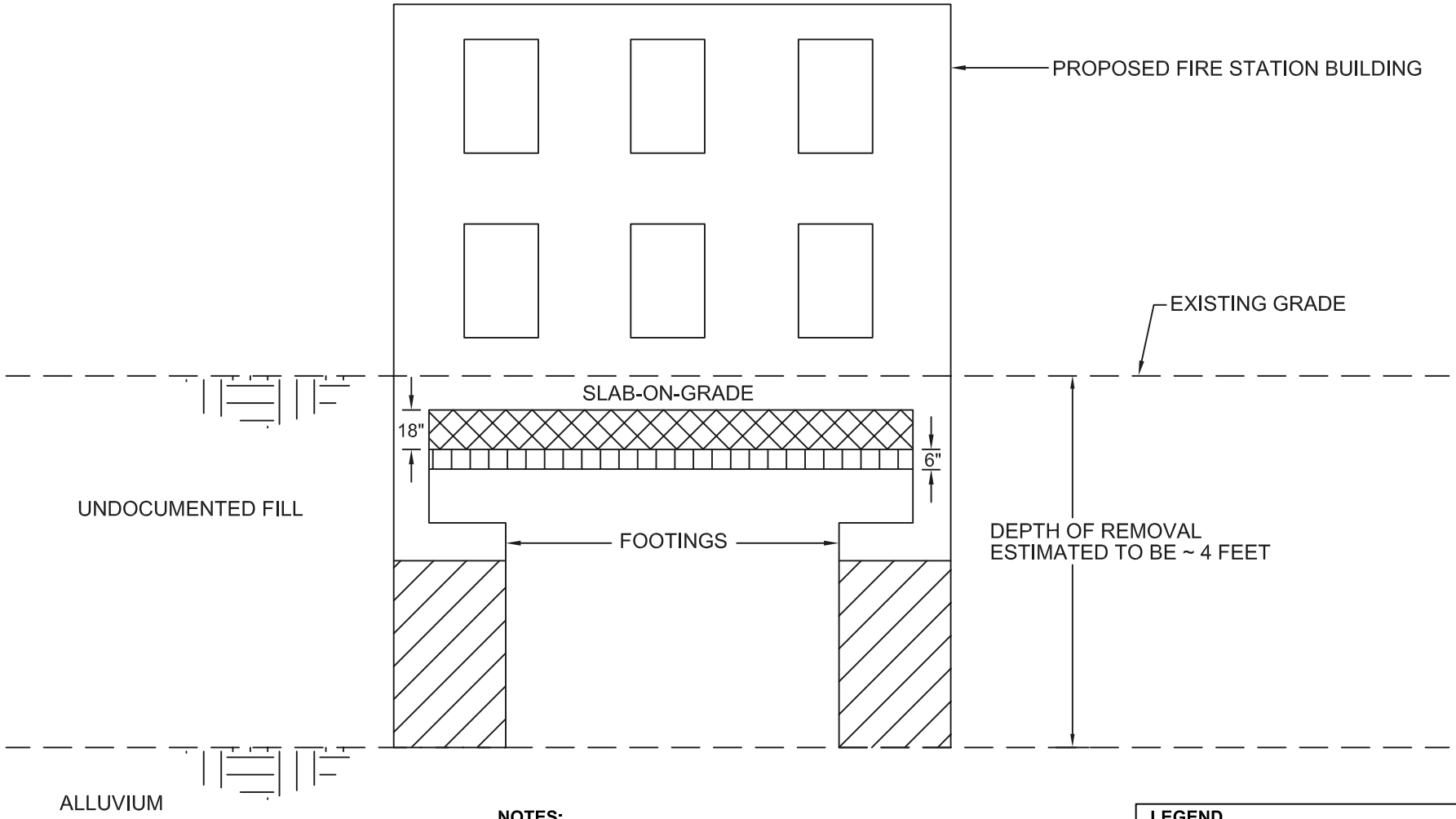
PROJECT NO.	DATE
401811002	4/13

SEISMIC HAZARD ZONES

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE
HAYWARD, CALIFORNIA

FIGURE
6

401811002-SHZ.dwg, Apr 16, 2013, 4:43pm, SN



NOTES:

1. EXCAVATIONS BELOW FOOTINGS ARE TO BE BACKFILLED USING CONTROLLED LOW-STRENGTH MATERIAL SEE SECTION 9.1.3.
2. EXCAVATIONS BELOW SLABS ARE TO BE BACKFILLED WITH ENGINEERED FILL, AGGREGATE BASE, LIME-TREATED SOIL OR MOISTURE VAPOR RETARDING SYSTEM AS PER SECTION 9 OF REPORT.
3. SCARIFICATION UNDER ENGINEERED FILL BELOW SLABS MAY BE OMITTED AND DEPTH OF REMOVALS REDUCED WHERE CHEMICAL TREATMENT OF EXISTING SUBGRADE IS PERFORMED PROVIDED THAT THE BOTTOM LIFT OF CHEMICALLY TREATED SOIL IS MIXED-IN-PLACE AND DEPTH OF TREATMENT EXTENDS TO 18 INCHES BELOW BOTTOM OF SLAB.

LEGEND

- REMOVAL BELOW SLABS
- REMOVAL BELOW FOOTINGS
- SCARIFICATION AND RECOMPACTION

NOT TO SCALE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

Ninyo & Moore		REMEDIAL GRADING SCHEMATIC	FIGURE
PROJECT NO.	DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	7
401811002	4/13		

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer free-falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using a modified split-barrel drive sampler. The sampler, with an external diameter of 3.0 inches, was lined with 6-inch long, thin brass liners with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass liners, sealed, and transported to the laboratory for testing.

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0							Bulk sample.
							Modified split-barrel drive sampler.
							No recovery with modified split-barrel drive sampler.
							Sample retained by others.
							Standard Penetration Test (SPT).
5							No recovery with a SPT.
		XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
							No recovery with Shelby tube sampler.
							Continuous Push Sample.
			Seepage.				Seepage.
10			Groundwater encountered during drilling.				Groundwater encountered during drilling.
			Groundwater measured after drilling.				Groundwater measured after drilling.
						SM	ALLUVIUM: Solid line denotes unit change.
							Dashed line denotes material change.
							Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Sheared Bedding Surface
15							
							The total depth line is a solid line that is drawn at the bottom of the boring.
20							

Ninyo & Moore

BORING LOG

EXPLANATION OF BORING LOG SYMBOLS

PROJECT NO.	DATE	FIGURE
	Rev. 01/03	

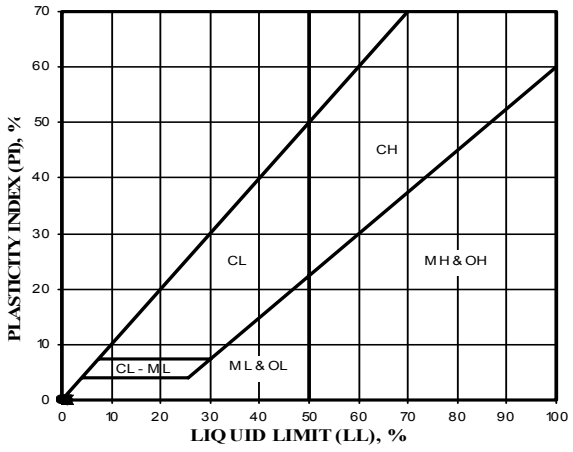
U.S.C.S. METHOD OF SOIL CLASSIFICATION

MAJOR DIVISIONS		SYMBOL	TYPICAL NAMES
COARSE-GRAINED SOILS (More than 1/2 of soil >No. 200 sieve size)	**GRAVELS (More than 1/2 of coarse fraction > No. 4 sieve size)**	GW	Well graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than 1/2 of coarse fraction <No. 4 sieve size)	SW	Well graded sands or gravelly sands, little or no fines
		SP	Poorly graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (More than 1/2 of soil <No. 200 sieve size)	**SILTS & CLAYS Liquid Limit <50**	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean
		OL	Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS Liquid Limit >50	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils

GRAIN SIZE CHART

CLASSIFICATION	RANGE OF GRAIN SIZE	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL	3" to No. 4	76.2 to 4.76
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
SAND	No. 4 to No. 200	4.76 to 0.075
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.420
Fine	No. 40 to No. 200	0.420 to 0.075
SILT & CLAY	Below No. 200	Below 0.075

PLASTICITY CHART



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U.S.C.S. METHOD OF SOIL CLASSIFICATION

DATE DRILLED 3-19-13 BORING NO. B-1

GROUND ELEVATION 54' ± Project Datum SHEET 1 OF 2

METHOD OF DRILLING 3" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 5 inches.
							AGGREGATE BASE: Approximately 4 inches.
		22				CL	FILL: Dark brown, moist, very stiff, CLAY; trace sand; trace subangular gravel; scattered rootlets.
		14				CL	ALLUVIUM: Reddish brown, moist, very stiff, CLAY; trace medium sand.
5		17	16.8				Very stiff.
						SM	Reddish brown, moist, medium dense, medium to coarse silty SAND; trace subangular to subrounded gravel.
						CL	Reddish brown, moist, stiff, CLAY; little medium sand.
		9					
10							
15		7					Little medium to coarse sand; few subangular and subrounded gravel.
20							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-1

DATE DRILLED 3-19-13 BORING NO. B-1

GROUND ELEVATION 54' ± Project Datum SHEET 2 OF 2

METHOD OF DRILLING 3" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
20		5				CL	ALLUVIUM: (continued) Reddish brown, moist, firm to stiff, CLAY; little medium to coarse sand; few subangular and subrounded gravel.
			▽				Reddish to medium brown, saturated.
25		16					Very stiff.
							Total Depth = 26.5 feet. Groundwater encountered at 22.5 feet during drilling. Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Backfilled with portland cement grout on 3-19-13.
30							
35							
40							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-2

DATE DRILLED 3-19-13 BORING NO. B-2

GROUND ELEVATION 53' ± Project Datum SHEET 1 OF 4

METHOD OF DRILLING 6" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3 inches.
							AGGREGATE BASE: Approximately 3.5 inches.
		7				CL	FILL: Dark brown, moist, stiff, CLAY; trace sand; scattered rootlets.
		18	18	107		CL	ALLUVIUM: Reddish brown, moist, very stiff, CLAY; trace sand.
5		11					Few fine to medium sand.
		8					Stiff, few fine sand.
10							
15		6					
20							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-3

DATE DRILLED 3-19-13 BORING NO. B-2

GROUND ELEVATION 53' ± Project Datum SHEET 2 OF 4

METHOD OF DRILLING 6" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
20						CL	ALLUVIUM: (continued) Reddish brown, moist, stiff, CLAY; few fine sand.
		11					Grayish brown with orange mottling.
			▽				Saturated.
25							Medium brown, very stiff.
		13					
30							Stiff; little fine to medium sand.
		12					
35							Stiff to very stiff.
		10					
40							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-4

DATE DRILLED 3-19-13 BORING NO. B-2

GROUND ELEVATION 53' ± Project Datum SHEET 3 OF 4

METHOD OF DRILLING 6" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
40						CL	ALLUVIUM: (continued) Medium brown, saturated, stiff to very stiff, CLAY with little fine to medium sand.
		13					Olive brown.
						SP-SC	Dark yellowish brown, saturated, dense, poorly graded SAND with clay and subangular gravel.
45		30					
		23					Medium dense, some subangular to subrounded gravel.
50						GC	Dark brown, saturated, very dense, clayey subangular GRAVEL with coarse sand.
		35					
		40					
						SP-SM	Medium brown, saturated, dense, poorly graded SAND with silt; trace subangular gravel.
55		27					
		32					Medium to coarse sand.
60							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-5

DATE DRILLED 3-19-13 BORING NO. B-2

GROUND ELEVATION 53' ± Project Datum SHEET 4 OF 4

METHOD OF DRILLING 6" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
60							Total Depth = 60 feet. Groundwater encountered at 24 feet during drilling. Groundwater may rise to a level higher than that measured in borehole due to relatively slow rate of seepage in clay and several other factors as discussed in the report. Backfilled with portland cement grout on 3-19-13.
65							
70							
75							
80							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-6

DATE DRILLED 3-19-13 BORING NO. B-3

GROUND ELEVATION 53' ± Project Datum SHEET 1 OF 2

METHOD OF DRILLING 3" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
0							ASPHALT CONCRETE: Approximately 3.5 inches.
							AGGREGATE BASE: Approximately 4 inches.
		16				CL	FILL: Dark brown, moist, very stiff, CLAY; trace sand.
		11				CL	ALLUVIUM: Medium to reddish brown, moist, very stiff, CLAY; few sand; trace gravel.
5		17	15.8	101.6			Reddish brown.
		6					Stiff.
10							
15		9					Little sand.
20							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-7

DATE DRILLED 3-19-13 BORING NO. B-3

GROUND ELEVATION 53' ± Project Datum SHEET 2 OF 2

METHOD OF DRILLING 3" Solid Stem Auger Diedrich D-120 Taber

DRIVE WEIGHT 140 lbs (Auto Hammer) DROP 30"

SAMPLED BY LLB LOGGED BY LLB REVIEWED BY KG/PCC

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S	DESCRIPTION/INTERPRETATION
20		7				CL	ALLUVIUM: (continued) Reddish brown, moist, stiff, CLAY; little sand.
							Reddish to light brown.
		12					Olive to medium brown.
25							Total Depth = 25 feet.
							No groundwater encountered. Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
							Backfilled with portland cement grout on 3-19-13.
30							
35							
40							

Ninyo & Moore

BORING LOG

CHERRYLAND FIRE STATION
19745 MEEKLAND AVENUE, HAYWARD, CALIFORNIA

PROJECT NO.	DATE	FIGURE
401811002	4/13	A-8

APPENDIX B

LABORATORY TESTING

Classification

Soil was visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

200 Wash

An evaluation of the percentage of particles finer than the No. 200 sieve in selected soil samples was performed in general accordance with ASTM D 1140. The results of the tests are presented on Figure B-1.

Atterberg Limits

Tests were performed on selected representative soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-2.

Expansion Index Test

The expansion index of selected materials was evaluated in general accordance with ASTM D 4829. The specimen was molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 1 percent). The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and was inundated with tap water. Readings of volumetric swell were made for a period of 24 hours. The test results are presented on Figure B-3.

Soil Corrosivity Tests

Soil pH, and resistivity tests were performed on representative samples in general accordance with California Test (CT) 643. The soluble sulfate and chloride content of selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-4.

R-Value

The resistance value, or R-value, for site soils was evaluated in general accordance with California Test (CT) 301. Sample was prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are shown on Figure B-5.

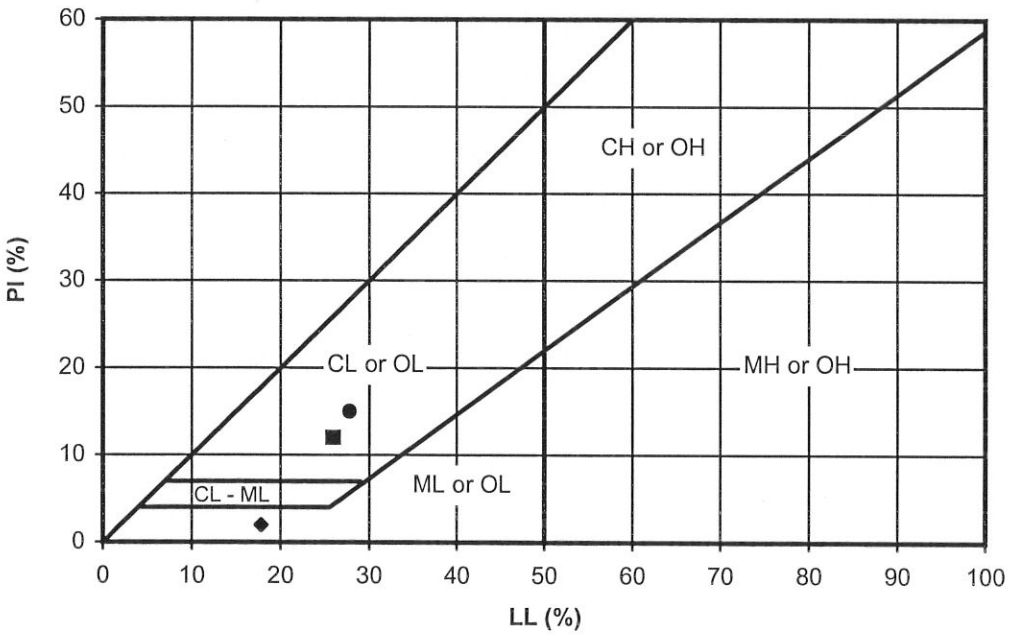
SAMPLE LOCATION	SAMPLE DEPTH (FT)	DESCRIPTION	PERCENT PASSING NO. 4	PERCENT PASSING NO. 200	USCS (TOTAL SAMPLE)
B - 2	49.0-49.5	POORLY GRADED SAND WITH CLAY	70	12	SP-SC
B - 2	55.0-56.5	POORLY GRADED SAND WITH SILT	95	6	SP-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 1140

Ninyo & Moore		NO. 200 SIEVE ANALYSIS	FIGURE
PROJECT	DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	B-1
401811002	4/13		

Fig B-1 401811002 200 WASHES B-2

SYMBOL	LOCATION	DEPTH (FT)	LIQUID LIMIT, LL (%)	PLASTIC LIMIT, PL (%)	PLASTICITY INDEX, PI (%)	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS (Entire Sample)
●	B - 2	6.5 - 7.0	28	13	15	CL	CL
■	B - 2	49.5 - 50	26	14	12	CL	SP-SC
◆	B - 2	58.5 - 60	18	16	2	ML	SP-SM



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

Ninyo & Moore	ATTERBERG LIMITS TEST RESULTS	FIGURE
PROJECT NO. 401811002 / DATE 4/13	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	B-2

Fig B-2 ATTERBERGS

SAMPLE LOCATION	SAMPLE DEPTH (FT)	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (PCF)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (IN)	EXPANSION INDEX	POTENTIAL EXPANSION
B - 1	0.8 - 4.0	11.2	105.3	20.7	0.031	33	Low
B - 2	0.5 - 3.5	11.1	103.7	23.2	0.030	29	Low

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

Ninyo & Moore	EXPANSION INDEX TEST RESULTS	FIGURE
PROJECT NO. 401811002 / DATE 4/13	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	B-3

SAMPLE LOCATION	SAMPLE DEPTH (FT)	pH [1]	RESISTIVITY [1] (Ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-3	1.5-2.0			10	0.001	90
B-3	2.0-2.5	6.1	1,170			

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

Ninyo & Moore		CORROSIVITY TEST RESULTS	FIGURE
PROJECT NO.	DATE	CHERRYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	B-4
401811002	4/13		

SAMPLE LOCATION	SAMPLE DEPTH (FT)	SOIL TYPE	R-VALUE
B-3	0.7 - 4.0	CLAY	8

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

Ninyo & Moore		R-VALUE TEST RESULTS	FIGURE
PROJECT NO.	DATE	CHERYLAND FIRE STATION 19745 MEEKLAND AVENUE HAYWARD, CALIFORNIA	B-5
401811002	4/13		

APPENDIX C

LIQUEFACTION AND DYNAMIC SETTLEMENT CALCULATIONS

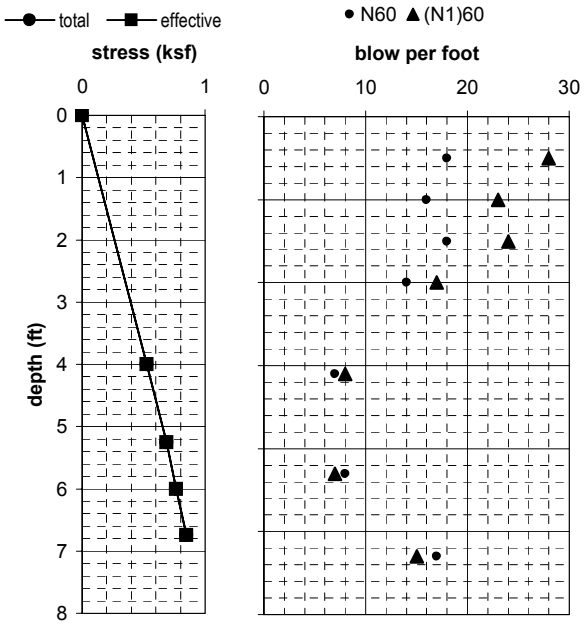
Project Name: Cherryland Fire Station
Calculation By: KG
Checked By: PCC

Project No.: 401811002
Date: 4/1/2013
Date: 4/1/2013

Profile/Boring: B-1

Depth to Groundwater (ft): 22

Formation	USCS Class.	depth to top of layer (ft)	depth to base of layer (ft)	layer thickness (ft)	Wet Unit Weight (pcf)	tot. vert. stress at top (psf)	tot. vert. stress at base (psf)
Fill	CL	0	4	4	131	0	524
Alluvium	CL	4	5.25	1.25	131	524	688
Alluvium	SM	5.25	6	0.75	107	688	768
Alluvium	CL	6	6.75	0.75	107	768	848



hammer type/method: auto-trip hammer
borehole diameter (in): 3

energy ratio correction, Cer: 1.50
borehole diameter correction, Cb: 1.00

sample depth (ft)	tot. vert. stress at depth (psf)	eff. vert. stress at depth (psf)	blowcnt N, (bpf)	cohesive? yes=1	sampler type?	equiv. SPT blowcnt Nspt, (bpf)	drill rod length	drill rod length correction Cr	N60 (bpf)	overbrdn correction Cn, (bpf)	N1 (bpf)	(N1)60
2.5	328	328	22	1	1	16	5	0.75	18	1.62	25	28
5	655	655	14	1	0	14	5	0.75	16	1.46	20	23
7.5	929	929	17	1	1	12	10	1.00	18	1.34	16	24
10	1196	1196	9	1	0	9	10	1.00	14	1.25	11	17
15.5	1785	1785	7	1	1	5	20	1.00	7	1.08	5	8
21.5	2427	2427	5	1	0	5	25	1.00	8	0.94	5	7
26.5	2962	2681	16	1	1	11	30	1.00	17	0.89	10	15
	#N/A	#N/A				#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

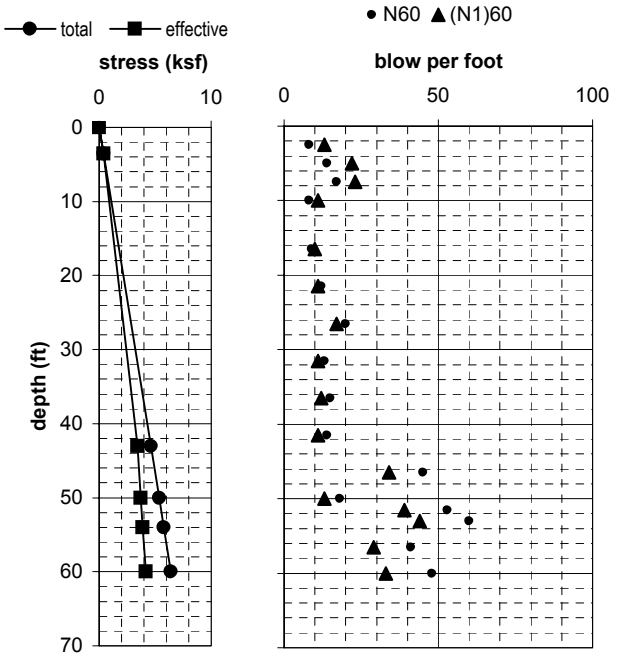
Project Name: Cherryland Fire Station
Calculation By: KG
Checked By: PCC

Project No.: 401811002
Date: 4/1/2013
Date: 4/1/2013

Profile/Boring: B-2

Depth to Groundwater (ft): 24

Formation	USCS Class.	depth to top of layer (ft)	depth to base of layer (ft)	layer thickness (ft)	Wet Unit Weight (pcf)	tot. vert. stress at top (psf)	tot. vert. stress at base (psf)
Fill	CL	0	3.5	3.5	107	0	375
Alluvium	CL	3.5	43	39.5	107	375	4601
Alluvium	SC	43	50	7	107	4601	5350
Alluvium	GC	50	54	4	107	5350	5778
Alluvium	SC	54	60	6	107	5778	6420
		#N/A		#N/A		#N/A	#N/A
		#N/A		#N/A		#N/A	#N/A
		#N/A		#N/A		#N/A	#N/A
		#N/A		#N/A		#N/A	#N/A



hammer type/method: auto-trip hammer
borehole diameter (in): 3

energy ratio correction, Cer: 1.50
borehole diameter correction, Cb: 1.00

sample depth (ft)	tot. vert. stress at depth (psf)	eff. vert. stress at depth (psf)	blowcnt N, (bpf)	cohesive? yes=1	sampler type?	equiv. SPT blowcnt Nspt, (bpf)	drill rod length	drill rod length correction Cr	N60 (bpf)	overbrdn correction Cn, (bpf)	N1 (bpf)	(N1)60
2.5	268	268	7	1	0	7	5	0.75	8	1.66	12	13
5	535	535	18	1	1	13	5	0.75	14	1.51	19	22
7.5	803	803	11	1	0	11	10	1.00	17	1.39	15	23
10	1070	1070	8	1	1	6	10	1.00	8	1.29	7	11
16.5	1766	1766	6	1	0	6	20	1.00	9	1.08	6	10
21.5	2301	2301	11	1	1	8	25	1.00	12	0.96	7	11
26.5	2836	2680	13	1	0	13	30	1.00	20	0.89	12	17
31.5	3371	2903	12	1	1	8	35	1.00	13	0.86	7	11
36.5	3906	3126	10	1	0	10	40	1.00	15	0.82	8	12
41.5	4441	3349	13	1	1	9	45	1.00	14	0.79	7	11
46.5	4976	3572	30	0	0	30	50	1.00	45	0.76	23	34
50	5350	3728	23	0	1	12	50	1.00	18	0.74	9	13
51.5	5511	3795	35	0	0	35	55	1.00	53	0.73	26	39
53	5671	3861	40	0	0	40	55	1.00	60	0.73	29	44
56.5	6046	4018	27	0	0	27	60	1.00	41	0.71	19	29
60	6420	4174	32	0	0	32	60	1.00	48	0.69	22	33

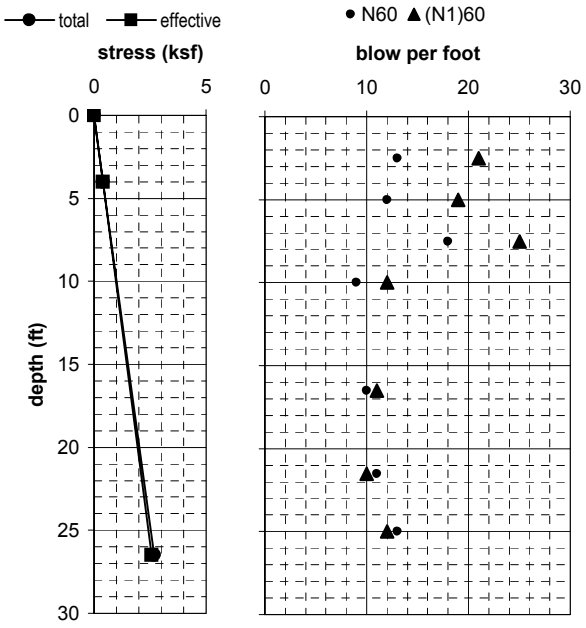
Project Name: Cherryland Fire Station
Calculation By: KG
Checked By: PCC

Project No.: 401811002
Date: 4/1/2013
Date: 4/1/2013

Profile/Boring: B-3

Depth to Groundwater (ft): 25

Formation	USCS Class.	depth to top of layer (ft)	depth to base of layer (ft)	layer thickness (ft)	Wet Unit Weight (pcf)	tot. vert. stress at top (psf)	tot. vert. stress at base (psf)
Fill	CL	0	4	4	101	0	404
Alluvium	CL	4	26.5	22.5	101	404	2677
		#N/A		#N/A		#N/A	#N/A
		#N/A		#N/A		#N/A	#N/A



hammer type/method: auto-trip hammer
borehole diameter (in): 3

energy ratio correction, Cer: 1.50
borehole diameter correction, Cb: 1.00

sample depth (ft)	tot. vert. stress at depth (psf)	eff. vert. stress at depth (psf)	blowcnt N, (bpf)	cohesive? yes=1	sampler type?	equiv. SPT blowcnt Nspt, (bpf)	drill rod length	drill rod length correction Cr	N60 (bpf)	overbrdn correction Cn, (bpf)	N1 (bpf)	(N1)60
2.5	253	253	16	1	1	11	5	0.75	13	1.67	19	21
5	505	505	11	1	0	11	5	0.75	12	1.53	17	19
7.5	758	758	17	1	1	12	10	1.00	18	1.41	17	25
10	1010	1010	6	1	0	6	10	1.00	9	1.31	8	12
16.5	1667	1667	9	1	1	6	20	1.00	10	1.11	7	11
21.5	2172	2172	7	1	0	7	25	1.00	11	0.99	7	10
25	2525	2525	12	1	1	8	25	1.00	13	0.92	8	12
	#N/A	#N/A				#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

DYNAMIC SETTLEMENT WORKSHEET

JOB NO.: 401811002 **JOB NAME:** Cherryland Fire St
CALCULATION BY: KG **DATE:** 4/4/2013
CHECKED BY: PCC **DATE:** 4/4/2013
BORING/PROFILE: B-1

Depth (z) of Layer Top	Depth (z) of Layer Bottom	Formation	Soil Type	Thick. t (ft.)	Midpoint of Layer (ft.)	Layer γ (pcf)	Total Stress σ_v (ksf)	Effect. Stress σ_v' (ksf)	$(N_1)_{60}$	Fines Content FC (%)	α Note 1	β Note 2	$(N_1)_{60cs}$ Note 3	$CRR_{7.5}$ Note 4	r_d Note 5	CSR_M Note 6	FOS_{liq} Note 8	$CSR_{7.5}$ Note 9	ε_v (%) Fig. 4-3	Sat. Sand Settlemnt ΔH_{sat} (in) Note 10	τ_{avg} (tsf)	mean effective stress σ_m' (tsf)	max Shear Modulus G_{max} (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{Nc} (%)	dry sand settlement ρ_e (in.)
0	2.5	Fill	CL	2.5	1.25	125	0.16	0.16	28	15	2.49816	1.04809	32	#N/A	0.997	0.324		0.252	0.0		0.03	0.05	326						
2.5	4	Alluvium	CL	1.5	3.25	125	0.41	0.41	23	15	2	1	27	0.3278	0.992	0.323		0.251	1.3		0.07	0.13	492						
4	5	Alluvium	CL	1	4.5	110	0.56	0.56	23	15	2	1	27	0.3278	0.990	0.322		0.250	1.3		0.09	0.18	575						
5	6	Alluvium	SM	1	5.5	110	0.67	0.67	23	15	2	1	27	0.3278	0.987	0.321		0.250	1.3		0.11	0.22	629	0.132364	16095	0.04537	0.038365	0.030999	0.01
6	7.5	Alluvium	CL	1.5	6.75	110	0.80	0.80	24	15	2	1	28	0.35786	0.984	0.320		0.249	0.0		0.13	0.26	701						
7.5	10	Alluvium	CL	2.5	8.75	110	1.02	1.02	17	15	2	1	20	0.21938	0.980	0.318		0.248	1.8		0.16	0.33	705						
10	15.5	Alluvium	CL	5.5	12.75	110	1.46	1.46	8	15	2	1	11	0.12099	0.970	0.315		0.246	2.9		0.23	0.47	656						
15.5	21.5	Alluvium	CL	6	18.5	110	2.10	2.10	7	15	2	1	10	0.11167	0.957	0.311		0.242	3.2		0.33	0.68	751						
21.5	26.5	Alluvium	CL	5	24	110	2.70	2.45	15	15	2	1	18	0.1943	0.944	0.338		0.263	1.9		0.41	0.79	1047						

Total Settlement = **0.00** **0.01**

20 = d_w, depth to groundwater table (ft)
6.8 = M, moment magnitude of design earthquake
0.5 = a_{max}, peak horizontal ground acceleration for design earthquake (g)

NOTES:

1 fines content correction factor α = 0 for FC<=5%; exp[1.76-(190/FC^2)] for 5%<FC<35%; 5.0 for FC>=35%
2 fines content correction factor β = 1.0 for FC<=5%; [0.99+(FC$^{1.5}$/1000)] for 5%<FC<35%; 1.2 for FC>=35%
3 clean sand blowcounts @ 1 tsf overburden @ 60% energy ratio, $(N_1)_{60cs} = \alpha+\beta*(N_1)_{60}$
4 cyclic resistance ratio @ M=7.5, $CRR_{7.5} = 1/[34-(N_1)_{60cs}] + (N_1)_{60cs}/135 + 50/[10*(N_1)_{60cs}+45]^2 - 1/200$ for $(N_1)_{60cs}$<30 else nonliquefiable
5 stress reduction factor, r_d = 1.0-0.007652*z for z<=9.15m; 1.174-0.0267*z for 9.15m<z<23m
6 cyclic stress ratio @ M, $CSR_M = \tau_{avg}/\sigma_m' = 0.65(a_{max}/g)(\sigma_v)(r_d)/(\sigma_v')$
7 magnitude scaling factor, $MSF = 10^{2.24}/M^{2.56}$ ==> MSF = 1.28
8 factor of safety against liquefaction, $FOS_{liq} = (CRR_{7.5}/CSR_M)MSF$
9 cyclic stress ratio @ M=7.5, $CSR_{7.5} = CSR_M/MSF$
10 settlement of saturated sand, $\Delta H_{sat} = \varepsilon_v * t$
11 Coefficient of Lateral Earth Pressure at Rest, Ko: Ko = 0.47
12 Number of Strain Cycles, Nc: Nc = 9.3397

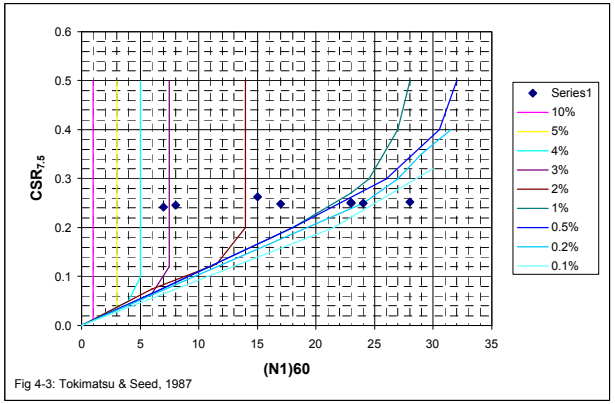


Fig 4-3: Tokimatsu & Seed, 1987

REFERENCES:

Youd, T.L. & Idriss, I.M., 2001, Summary Report from the 1996 NCEER and 1998 NCEEF/NSF Workshop on Evaluation of Liquefaction Resistance of Soils, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 127, No. 10
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Pradel, D.J., 1998, Procedure to Evaluate Earthquake Induced Settlements in Dry Sandy Soils, Journal of Geotechnical and Geoenvironmental Engineering, ASCE, Vol 124, No. 4.

DYNAMIC SETTLEMENT WORKSHEET

JOB NO.: 401811002 **JOB NAME:** Cherryland Fire St
CALCULATION BY: KG **DATE:** 4/4/2013
CHECKED BY: PCC **DATE:** 4/4/2013
BORING/PROFILE: B-2

Depth (z) of Layer Top	Depth (z) of Layer Bottom	Formation	Soil Type	Thick. t (ft.)	Midpoint of Layer (ft.)	Layer γ (pcf)	Total Stress σ_v (ksf)	Effect. Stress σ_v' (ksf)	$(N_1)_{60}$	Fines Content FC (%)	α Note 1	β Note 2	$(N_1)_{60cs}$ Note 3	$CRR_{7.5}$ Note 4	r_d Note 5	CSR_M Note 6	FOS_{liq} Note 8	$CSR_{7.5}$ Note 9	ε_v (%) Fig. 4-3	Sat. Sand Settlemnt ΔH_{sat} (in) Note 10	τ_{avg} (tsf)	mean effective stress σ_m' (tsf)	max Shear Modulus G_{max} (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{Nc} (%)	dry sand settlement ρ_e (in.)
0	2.5	Fill	CL	2.5	1.25	110	0.14	0.14	13	15	2.49816	1.04809	16	0.17155	0.997	0.324		0.252	2.2		0.02	0.04	236						
2.5	3.5	Fill	CL	1	3	110	0.33	0.33	13	15	2	1	16	0.17155	0.993	0.323		0.251	2.2		0.05	0.11	366						
3.5	5	Alluvium	CL	1.5	4.25	110	0.47	0.47	22	15	2	1	26	0.30329	0.990	0.322		0.250	1.3		0.08	0.15	520						
5	7.5	Alluvium	CL	2.5	6.25	110	0.69	0.69	23	15	2	1	27	0.3278	0.986	0.320		0.249	0.0		0.11	0.22	640						
7.5	10	Alluvium	CL	2.5	8.75	110	0.96	0.96	11	15	2	1	14	0.15043	0.980	0.318		0.248	2.5		0.15	0.31	592						
10	16.5	Alluvium	CL	6.5	13.25	110	1.46	1.46	10	15	2	1	13	0.14035	0.969	0.315		0.245	2.6		0.23	0.47	705						
16.5	21.5	Alluvium	CL	5	19	110	2.09	2.09	11	15	2	1	14	0.15043	0.956	0.311		0.242	2.5		0.32	0.68	872						
21.5	24	Alluvium	CL	2.5	22.75	110	2.50	2.33	11	15	2	1	14	0.15043	0.947	0.331		0.257	2.5		0.39	0.75	921						
24	26.5	Alluvium	CL	2.5	25.25	110	2.78	2.45	17	15	2	1	20	0.21938	0.941	0.347		0.270	1.8		0.42	0.79	1092						
26.5	31.5	Alluvium	CL	5	29	110	3.19	2.63	11	15	2	1	14	0.15043	0.933	0.368		0.286	2.5		0.48	0.85	978						
31.5	36.5	Alluvium	CL	5	34	110	3.74	2.87	12	15	2	1	15	0.16081	0.899	0.381		0.297	2.3		0.55	0.93	1051						
36.5	41.5	Alluvium	CL	5	39	110	4.29	3.10	11	15	2	1	14	0.15043	0.858	0.386		0.300	2.5		0.60	1.00	1063						
41.5	43	Alluvium	CL	1.5	42.25	110	4.65	3.26	11	15	2	1	14	0.15043	0.832	0.386		0.300	2.5		0.63	1.05	1089						
43	46.5	Alluvium	SP-SC	3.5	44.75	110	4.92	3.38	34	15	2	1	38	#N/A	0.812	0.385	#N/A	0.299	0.0	0.00	0.65	1.09	1615						
46.5	50	Alluvium	SP-SC	3.5	48.25	110	5.31	3.54	13	12	2	1	15	0.1597	0.784	0.381	0.54	0.297	2.2	0.90	0.68	1.15	1201						
50	51.5	Alluvium	GC	1.5	50.75	110	5.58	3.66	39	12	2	1	42	#N/A	0.763	0.378	#N/A	0.294	0.0	0.00	0.69	1.18	1761						
51.5	54	Alluvium	GC	2.5	52.75	110	5.80	3.76	44	12	2	1	47	#N/A	0.747	0.375	#N/A	0.292	0.0	0.00	0.70	1.22	1856						
54	56.5	Alluvium	SP-SM	2.5	55.25	110	6.08	3.88	29	6	0	1	29	0.41835	0.727	0.370	1.45	0.288	0.0	0.00	0.72	1.25	1641						
56.5	60	Alluvium	SP-SM	3.5	58.25	110	6.41	4.02	33	6	0	1	33	#N/A	0.703	0.364	#N/A	0.283	0.0	0.00	0.73	1.30	1744						

Total Settlement = **0.90** **0.00**

20 = d_w, depth to groundwater table (ft)
6.8 = M, moment magnitude of design earthquake
0.5 = a_{max}, peak horizontal ground acceleration for design earthquake (g)

NOTES:

1 fines content correction factor α = 0 for FC<=5%; exp[1.76-(190/FC^2)] for 5%<FC<35%; 5.0 for FC>=35%
2 fines content correction factor β = 1.0 for FC<=5%; [0.99+(FC$^{1.5}$/1000)] for 5%<FC<35%; 1.2 for FC>=35%
3 clean sand blowcounts @ 1 tsf overburden @ 60% energy ratio, $(N_1)_{60cs} = \alpha+\beta*(N_1)_{60}$
4 cyclic resistance ratio @ M=7.5, $CRR_{7.5} = 1/[34-(N_1)_{60cs}] + (N_1)_{60cs}/135 + 50/[10*(N_1)_{60cs}+45]^2 - 1/200$ for $(N_1)_{60cs}$<30 else nonliquefiable
5 stress reduction factor, r_d = 1.0-0.007652*z for z<=9.15m; 1.174-0.0267*z for 9.15m<z<23m
6 cyclic stress ratio @ M, $CSR_M = \tau_{avg}/\sigma_m' = 0.65(a_{max}/g)(\sigma_v)(r_d)/(\sigma_v')$
7 magnitude scaling factor, $MSF = 10^{2.24}/M^{2.56}$ ==> MSF = 1.28
8 factor of safety against liquefaction, $FOS_{liq} = (CRR_{7.5}/CSR_M)MSF$
9 cyclic stress ratio @ M=7.5, $CSR_{7.5} = CSR_M/MSF$
10 settlement of saturated sand, $\Delta H_{sat} = \varepsilon_v * t$
11 Coefficient of Lateral Earth Pressure at Rest, Ko: Ko = 0.47
12 Number of Strain Cycles, Nc: Nc = 9.3397

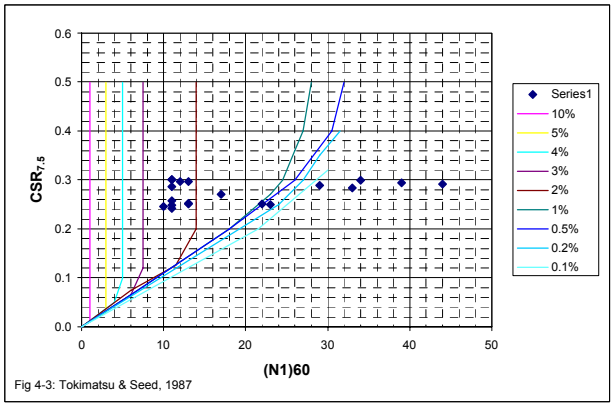

Fig 4-3: Tokimatsu & Seed, 1987

REFERENCES:

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DYNAMIC SETTLEMENT WORKSHEET

JOB NO.: 401811002 **JOB NAME:** Cherryland Fire St
CALCULATION BY: KG **DATE:** 4/4/2013
CHECKED BY: PCC **DATE:** 4/4/2013
BORING/PROFILE: B-3

Depth (z) of Layer Top	Depth (z) of Layer Bottom	Formation	Soil Type	Thick. t (ft.)	Midpoint of Layer (ft.)	Layer γ (pcf)	Total Stress σ_v (ksf)	Effect. Stress σ_v' (ksf)	$(N_1)_{60}$	Fines Content FC (%)	α Note 1	β Note 2	$(N_1)_{60cs}$ Note 3	$CRR_{7.5}$ Note 4	r_d Note 5	CSR_M Note 6	FOS_{liq} Note 8	$CSR_{7.5}$ Note 9	ε_v (%) Fig. 4-3	Sat. Sand Settlemnt ΔH_{sat} (in) Note 10	τ_{avg} (tsf)	mean effective stress σ_m' (tsf)	max Shear Modulus G_{max} (tsf)	a	b	γ (%)	ε_{15} (%)	ε_{Nc} (%)	dry sand settlement ρ_e (in.)
0	2.5	Fill	CL	2.5	1.25	125	0.16	0.16	21	15	2.49816	1.04809	25	0.28249	0.997	0.324		0.252	1.4		0.03	0.05	296						
2.5	4	Fill	CL	1.5	3.25	125	0.41	0.41	19	15	2	1	22	0.248	0.992	0.323		0.251	1.6		0.07	0.13	461						
4	5	Alluvium	CL	1	4.5	110	0.56	0.56	19	15	2	1	22	0.248	0.990	0.322		0.250	1.6		0.09	0.18	539						
5	7.5	Alluvium	CL	2.5	6.25	110	0.75	0.75	25	15	2	1	29	0.39675	0.986	0.320		0.249	0.0		0.12	0.24	686						
7.5	10	Alluvium	CL	2.5	8.75	110	1.02	1.02	12	15	2	1	15	0.16081	0.980	0.318		0.248	2.3		0.16	0.33	628						
10	16.5	Alluvium	CL	6.5	13.25	110	1.52	1.52	11	15	2	1	14	0.15043	0.969	0.315		0.245	2.5		0.24	0.49	743						
16.5	21.5	Alluvium	CL	5	19	110	2.15	2.15	10	15	2	1	13	0.14035	0.956	0.311		0.242	2.6		0.33	0.70	857						
21.5	25	Alluvium	CL	3.5	23.25	110	2.62	2.41	12	15	2	1	15	0.16081	0.946	0.333		0.259	2.3		0.40	0.78	965						

Total Settlement = **0.00** **0.00**

20 = d_w, depth to groundwater table (ft)
6.8 = M, moment magnitude of design earthquake
0.5 = a_{max}, peak horizontal ground acceleration for design earthquake (g)

NOTES:

1 fines content correction factor α = 0 for FC<=5%; exp[1.76-(190/FC^2)] for 5%<FC<35%; 5.0 for FC>=35%
2 fines content correction factor β = 1.0 for FC<=5%; [0.99+(FC$^{1.5}$/1000)] for 5%<FC<35%; 1.2 for FC>=35%
3 clean sand blowcounts @ 1 tsf overburden @ 60% energy ratio, $(N_1)_{60cs} = \alpha+\beta*(N_1)_{60}$
4 cyclic resistance ratio @ M=7.5, $CRR_{7.5} = 1/[34-(N_1)_{60cs}] + (N_1)_{60cs}/135 + 50/[10*(N_1)_{60cs}+45]^2 - 1/200$ for $(N_1)_{60cs}$<30 else nonliquefiable
5 stress reduction factor, r_d = 1.0-0.007652*z for z<=9.15m; 1.174-0.0267*z for 9.15m<z<23m
6 cyclic stress ratio @ M, $CSR_M = \tau_{avg}/\sigma_m' = 0.65(a_{max}/g)(\sigma_v)(r_d)/(\sigma_v')$
7 magnitude scaling factor, $MSF = 10^{2.24}/M^{2.56}$ ==> MSF = 1.28
8 factor of safety against liquefaction, $FOS_{liq} = (CRR_{7.5}/CSR_M)MSF$
9 cyclic stress ratio @ M=7.5, $CSR_{7.5} = CSR_M/MSF$
10 settlement of saturated sand, $\Delta H_{sat} = \varepsilon_v * t$
11 Coefficient of Lateral Earth Pressure at Rest, Ko: Ko = 0.47
12 Number of Strain Cycles, Nc: Nc = 9.3397

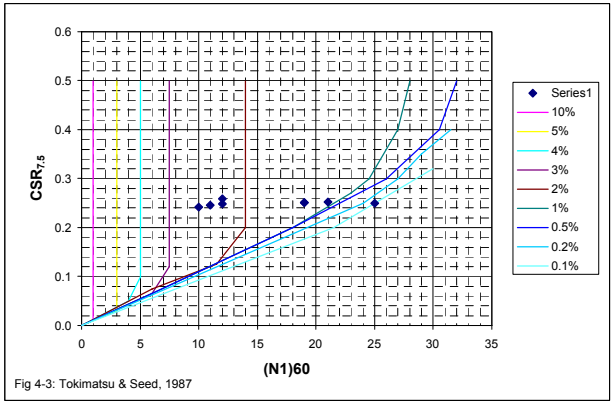

Fig 4-3: Tokimatsu & Seed, 1987

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JULY 23, 2010

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

19745 & 19755 MEEKLAND AVENUE
HAYWARD, CALIFORNIA 94541

AEI PROJECT NO. 289963

PREPARED FOR

ALAMEDA COUNTY REDEVELOPMENT AGENCY
224 WEST WINTON AVENUE, SUITE 109
HAYWARD, CALIFORNIA 94544

PREPARED BY

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

2500 CAMINO DIABLO, SUITE 200
WALNUT CREEK, CALIFORNIA 94597
(925) 746-6000

EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by Alameda County Redevelopment Agency to conduct a Phase I Environmental Site Assessment (ESA), in conformance with the scope and limitations of ASTM Standard Practice E1527-05 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at 19745 & 19755 Meekland Avenue in the City of Hayward, Alameda County, California. Any exceptions to, or deletions from, this practice are described in Section 1.3 of this report.

PROPERTY DESCRIPTION

The subject property is located on the west side of Meekland Avenue Street in a mixed commercial and residential area of Hayward. The property totals approximately 0.988 acre and is improved with two single-story buildings totaling approximately 2,000 square feet. The buildings are currently unoccupied residential dwellings. In addition to the subject property building, the property is improved with concrete pads associated with former additional on-site buildings, asphalt-paved parking areas and associated landscaping.

Based on a review of historical sources, the subject property was developed with two residential dwellings by the 1940's. In around 1960, a third residential dwelling was constructed on-site. In the early 1960's, a private detached garage and four warehouse buildings were constructed on the central and western portions of the lot, respectively. The residential dwellings and warehouses were used for residential uses, offices, and retail sales and storage (primarily automotive parts) from the early 1960's until around 2006. From 2006 to 2008, the four warehouses, detached garage, and one residential dwelling were removed from the site.

Additional addresses associated with the subject property include 19743 & 19759 Meekland Avenue. These addresses were also researched during the course of this assessment.

The subject property was not identified in the regulatory database.

The immediately surrounding properties consist of the following:

North	Residential dwelling (19635 Meekland Avenue)
South	Residential apartment buildings (19865 & 19875 Meekland Avenue)
East	Meekland Avenue, followed by residential dwellings (19738, 19750, and 19754 Meekland Avenue)
West	The Southern Pacific railroad, followed by various residential dwellings (addresses not observed)

None of the adjacent sites were identified in the regulatory database.

Based upon topographic map interpretation and groundwater monitoring data for a nearby site (19984 Meekland Avenue), the direction of groundwater flow beneath the subject property is inferred to be to the west, and present at a depth of 20-25 feet below ground surface (bgs).

FINDINGS

Recognized Environmental Conditions (RECs) are defined by the ASTM Standard Practice E1527-05 as the presence or likely presence of any hazardous substances or petroleum products on a

property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. AEI's investigation has revealed the following recognized environmental conditions associated with the subject property or nearby properties:

- No on-site recognized environmental conditions were identified during the course of this investigation.

Historical Recognized Environmental Conditions (HRECs) are defined by the ASTM Standard Practice E1527-05 as an environmental condition which in the past would have been considered a recognized environmental condition, but which may or may not be considered a recognized environmental condition currently. AEI's investigation has revealed the following historical recognized environmental conditions associated with the subject property or nearby properties:

- No on-site historical recognized environmental conditions were identified during the course of this investigation.

Environmental Issues include environmental concerns identified by AEI that warrant discussion but do not qualify as recognized environmental conditions, as defined by the ASTM Standard Practice E1527-05. AEI's investigation has revealed the following environmental issues associated with the subject property or nearby properties:

- Due to the age of the subject property buildings, there is a potential that asbestos-containing materials (ACMs) are present. During the site inspection, damaged vinyl flooring systems, drywall systems, and roofing materials were observed in various areas of the two on-site residential buildings. Based on the potential presence of ACMs, AEI recommends the property owner implement an Operations and Maintenance (O & M) Plan which stipulates that the assessment, repair and maintenance of damaged materials be performed to protect the health and safety of the building occupants.

- Due to the age of the subject property buildings, there is a potential that lead-based paint (LBP) is present. During the site inspection, damaged painted surfaces (exterior walls, interior walls, and interior trim) were observed throughout the two on-site residential buildings. Based on the potential presence of LBP, AEI recommends the property owner implement an O & M Plan which stipulates that the assessment, repair and maintenance of damaged painted surfaces be performed to protect the health and safety of the building occupants. Local regulations may apply to lead-based paint in association with building demolition/renovations and worker/occupant protection. Actual material samples would need to be collected or an XRF survey performed in order to determine if LBP is present. It should be noted that construction activities that disturb materials or paints containing *any amount* of lead may be subject to certain requirements of the OSHA lead standard contained in 29 CFR 1910.1025 and 1926.62.

- AEI Consultants observed interior areas of the subject buildings in order to identify the significant presence of mold. During the on-site reconnaissance, obvious visual signs of mold growth or conditions conducive for mold growth were observed in the living areas on drywall surfaces, as well as around several window frames. Based upon the amount of fungal growth observed, AEI recommends a certified mold remediation contractor be

consulted to conduct removal of all water-damaged building materials and visible mold within the affected areas. Repairs to prevent water intrusion and damage in the impacted area should also be performed. In addition, AEI recommends that post-remediation verification be conducted by a third-party consultant to ensure successful remediation of the affected area. Furthermore, in order to assist onsite staff with proper methods of mold growth evaluation and remediation, as well as proper training for onsite maintenance personnel, it would be prudent for the property owner to implement a Mold/Moisture Plan (MMP).

- The western portion of the subject property was historically used for agricultural purposes circa 1946. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used onsite. The subject property is planned for commercial development, and the entire area of the subject property will either be paved over or covered by improvements that make direct contact with any potential remaining concentrations in the soil unlikely. However, it may be prudent for the owner/user of the report to contact the local planning department to determine whether sampling relating to the former agricultural use of the subject property is required in preparation for development.

CONCLUSIONS, OPINIONS AND RECOMMENDATIONS

We have performed a Phase I Environmental Site Assessment for the property located at 19745 & 19755 Meekland Avenue in the City of Hayward, Alameda County, California, in conformance with the scope and limitations of ASTM Standard Practice E1527-05 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312). Any exceptions to, or deletions from, this practice are described in Section 1.3 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property. AEI recommends no further investigations for the subject property at this time.

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1.0 INTRODUCTION

This report documents the methods and findings of the Phase I Environmental Site Assessment (ESA) performed in conformance with the scope and limitations of ASTM Standard Practice E1527-05 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at 19745 & 19755 Meekland Avenue in the City of Hayward, Alameda County, California (Figure 1: Site Location Map, Figure 2: Site Map, and Appendix A: Property Photographs).

1.1 SCOPE OF WORK

The purpose of the Phase I Environmental Site Assessment is to identify potential environmental liabilities associated with the presence of hazardous materials, their use, storage, and disposal at and in the vicinity of the subject property, as well as regulatory non-compliance that may have occurred at the subject property. Property assessment activities focused on: 1) a review of federal, state, tribal and local databases that identify and describe underground fuel tank sites, leaking underground fuel tank sites, hazardous waste generation sites, and hazardous waste storage and disposal facility sites within the ASTM approximate minimum search distance; 2) a property and surrounding site reconnaissance, and interviews with the past and present owners and current occupants and operators to identify potential environmental contamination; and 3) a review of historical sources to help ascertain previous land use at the site and in the surrounding area.

The goal of AEI Consultants in conducting the environmental site assessment was to identify the presence or likely presence of any hazardous substances or petroleum products on the property that may indicate an existing release, a past release, or a material threat of a release of any hazardous substance or petroleum product into the soil, groundwater, or surface water of the property.

1.2 SIGNIFICANT ASSUMPTIONS

The following assumptions are made by AEI Consultants in this report. AEI Consultants relied on information derived from secondary sources including governmental agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, and personal interviews. AEI Consultants has reviewed and evaluated the thoroughness and reliability of the information derived from secondary sources including government agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, or personal interviews. It appears that all information obtained from outside sources and reviewed for this investigation is thorough and reliable. However, AEI cannot guarantee the thoroughness or reliability of this information.

Groundwater flow and depth to groundwater, unless otherwise specified by on-site well data, or well data from adjacent sites are assumed based on contours depicted on the United States Geological Survey topographic maps. AEI Consultants assumes the property has been correctly and accurately identified by the client, designated representative of the client, property contact, property owner, and property owner's representatives.

Responses received from local, state, or federal agencies or other secondary sources of information after the issuance of this report may change certain facts, findings, conclusions, or circumstances to the report. A change in any fact, circumstance, or industry-accepted procedure upon which this report was based may adversely affect the findings, conclusions, and recommendations expressed in this report.

1.4 LIMITING CONDITIONS

AEI was granted full and complete access to the subject property.

1.5 DATA GAPS AND DATA FAILURE

According to ASTM E1527-05, data gaps occur when the Environmental Professional is unable to obtain information required, despite good faith efforts to gather such information.

Data failure is one type of data gap. According to ASTM E1527-05 "data failure occurs when all of the standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the objectives have not been met". Pursuant to ASTM Standards, historical sources are required to document property use back to the property's first developed use or back to 1940, whichever is earlier.

The following data gap was identified during the course of this investigation:

- The earliest definitive historical resource obtained during this investigation was an aerial photograph from 1946 which indicated the subject property was developed with two residences. Although city directories were reviewed back to 1940, no occupancy information was available for the subject property addresses. The lack of historical sources for the subject property dating back to first developed use or 1940 represents historical data source failure. However, it is assumed that prior to 1946 the subject property would have been used for residential purposes, if not undeveloped. Therefore, this data gap is not expected to significantly alter the findings of this investigation.

1.6 RELIANCE

This investigation was prepared for the sole use and benefit of Alameda County Redevelopment Agency. Neither this report, nor any of the information contained herein shall be used or relied upon for any purpose by any person or entity other than Alameda County Redevelopment Agency.

2.0 SITE AND VICINITY DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

The subject property is located on the west side of Meekland Avenue Street in a mixed commercial and residential area of Hayward. The property totals approximately 0.988 acre and is improved with two single-story buildings totaling approximately 2,000 square feet. The buildings are currently unoccupied residential dwellings. In addition to the subject property building, the property is improved with concrete pads associated with former additional on-site buildings, asphalt-paved parking areas and associated landscaping.

The subject property was not identified in the regulatory database.

The Assessor's Parcel Numbers (APNs) for the subject property are 429-5-22 and 429-5-23. Heating and cooling systems on the subject property are fueled by natural gas and electricity provided by Pacific Gas and Electric (PG&E) and East Bay Municipal Utility District (EBMUD), respectively. Potable water and sewage disposal are provided by municipal services.

Refer to Figure 1: Site Location Map, Figure 2: Site Map, and Appendix A: Property Photographs for site location.

2.2 SITE AND VICINITY CHARACTERISTICS

The subject property is located in a mixed commercial and residential area of Hayward. The immediately surrounding properties consist of the following:

North	Residential dwelling (19635 Meekland Avenue)
South	Residential apartment buildings (19865 & 19875 Meekland Avenue)
East	Meekland Avenue, followed by residential dwellings (19738, 19750, and 19754 Meekland Avenue)
West	The Southern Pacific railroad, followed by various residential dwellings (addresses not observed)

None of the adjacent sites were identified in the regulatory database.

2.3 GEOLOGY AND HYDROGEOLOGY

According to information obtained from the United States Geological Survey (USGS), the area surrounding the subject property is underlain by alluvial deposits of the Cenozoic-era. Based on a review of the United States Department of Agriculture (USDA) Soil Survey for the area of the subject property, the soils in the vicinity of the subject property are classified as the Yolo Series. Soils from this series are characterized as a silty loam.

Based on a review of the USGS Hayward Quadrangle Topographic Map, the subject property is situated approximately 55 feet above mean sea level, and the local topography is sloped gently to the west-northwest. The nearest surface water is the San Francisco Bay, located approximately three miles to the west. Based upon topographic map interpretation and groundwater monitoring data for a nearby site, the direction of groundwater flow beneath the subject property is inferred to be to the west. Based on information obtained from a *Fuel Leak Case Closure Summary Report* for a nearby site (19984 Meekland Avenue) prepared by

Alameda County Environmental Health Department (ACEHD) and dated May 16, 2006, the depth to groundwater in the vicinity of the subject property is expected to be encountered at 20-25 feet below ground surface (bgs).

3.0 HISTORICAL REVIEW OF SITE AND VICINITY

3.1 HISTORICAL SUMMARY

Reasonably ascertainable standard historical sources as outlined in ASTM Standard E1527-05 were used to determine previous uses and occupancies of the subject property that are likely to have led to recognized environmental conditions in connection with the subject property. A chronological summary of historical data found, including but not limited to aerial photographs, historic city directories and Sanborn fire insurance maps and building department records is as follows:

Date Range	Source(s)	Subject Property Description/Use
Circa 1940's – early circa 1960's	Aerials, City Directories, Building Records, Interviews	Two residential dwellings/Residential
Circa early 1960's - 2006	Aerials, City Directories, Building Records, Interviews	Three residential dwellings, and retail and storage warehouses/Residential and automotive parts sales and storage (Archer Brothers Jeep Parts & Accessories)
2008 - present	Aerials, City Directories, Building Records, Interviews	Two residential dwellings/Residential

Based on a review of historical sources, the subject property was developed with two residential dwellings by the 1940's. In around 1960, a third residential dwelling was constructed on-site. In the early 1960's, a private detached garage and four warehouse buildings were constructed on the central and western portions of the lot, respectively. The residential dwellings and warehouses were used for residential uses, offices, and retail sales and storage (primarily automotive parts) from the early 1960's until around 2006. From 2006 to 2008, the four warehouses, detached garage, and one residential dwelling were removed from the site.

Additional addresses associated with the subject property include 19743 & 19759 Meekland Avenue. These addresses were also researched during the course of this assessment.

The western portion of the subject property was historically used for agricultural purposes circa 1946. There is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used onsite. The subject property is planned for commercial development, and the entire area of the subject property will either be paved over or covered by improvements that make direct contact with any potential remaining concentrations in the soil unlikely. However, it may be prudent for the owner/user of the report to contact the local planning department to determine whether sampling relating to the former agricultural use of the subject property is required in preparation for development.

Potential environmental concerns associated with the historic use of the subject property as an automotive parts sales and storage facility/yard are as follows:

- Although small-scale auto repair operations were presumably performed on the subject property from the 1960's until 2006, no indication of the presence of fuel or oil storage tanks was found in the review of historical sources. Although hazardous substances and petroleum products were likely associated with the former auto parts sales and storage facility/yard operations, no evidence of improper storage or handling of these materials was

reported to the local regulatory agencies. No significant staining or evidence of a release was observed during the site reconnaissance. No indication of floor drains or oil/water separators was observed during the site inspection. The subject property is not listed for any spills or releases in connection with the use or handling of these materials. Based on this information, the small size of the operation visible in aerial photographs, and the lack of any observed conduits to the subsurface, the historical uses of the subject property are not expected to represent a significant environmental concern.

If available, copies of historical sources are provided in the report appendices.

3.2 AERIAL PHOTOGRAPH REVIEW

On July 20, 2010, AEI Consultants reviewed aerial photographs of the subject property and surrounding area. Aerial photographs were reviewed for the following years:

Date: 1946 Scale: 1″ = 800′	Date: 1958 Scale: 1″ = 800′
Date: 1968 Scale: 1″ = 800′	Date: 1970 Scale: 1″ = 800′
Date: 1980 Scale: 1″ = 800′	Date: 1993 Scale: 1″ = 528′
Date: 2004 Scale: 1″ = 528′	Date: 2009 Scale: Unknown

In the 1946 aerial photograph, the subject property appears to be developed with two residential dwellings in the eastern portion of the lot, with orchard trees depicted in the western portion of the lot. The surrounding sites appear to be residential dwellings to the north and south; Meekland Avenue, followed by residential dwellings to the east; and a railroad track, followed by undeveloped land to the west.

In the 1958 aerial photograph, the subject property still appears to be developed with two residential dwellings in the eastern portion of the lot. The orchard trees appear to have been cleared. The surrounding sites appear to be residential dwellings to the north and south; Meekland Avenue, followed by residential dwellings to the east; and a railroad track, followed by residential dwellings to the west.

In the 1968 aerial photograph, the subject property now appears to be developed with three residential dwellings in the eastern portion of the lot, and additional commercial buildings in the western portion of the lot. No significant changes regarding the surrounding sites were noted.

In the 1970 aerial photograph, the subject property still appears to be developed with three residential dwellings in the eastern portion of the lot. The commercial buildings in the western portion of the lot are more clearly depicted as three warehouse-type building structures. No significant changes regarding the surrounding sites were noted.

In the 1980 aerial photograph, the subject property still appears to be developed with three residential dwellings in the eastern portion of the lot. A fourth commercial warehouse building

appears to have been constructed in the western portion of the lot. No significant changes regarding the surrounding sites were noted, except that the surrounding site to the south has been changed from residential dwellings to a larger residential apartment development.

No significant changes were noted in the 1993 and 2004 aerial photographs.

In the 2009 aerial photograph, the subject property and surrounding properties are developed as they are today.

Copies of reviewed aerial photographs are included as Figure 3.

3.3 SANBORN FIRE INSURANCE MAPS

Sanborn Fire Insurance maps were developed in the late 1800s and early 1900s for use as an assessment tool for fire insurance rates in urbanized areas. A search was made of the Seattle Public Library On-line collection of Sanborn Fire Insurance maps on July 20, 2010.

Sanborn map coverage was not available for the subject property.

3.4 CITY DIRECTORIES

A search of historic city directories was conducted for the subject property at Hayward Public Library on July 20, 2010. Directories were available and reviewed for the years 1940 - 2008. The following table summarizes the results of the city directory search.

City Directory Search Results

Year(s)	Occupant Listed
1940, 1945, 1950, 1955, 1960, 1965, 1970, 1975	No listing for the subject property addresses
1980, 1985	Archer Brothers & Ruth's Flowers (19745 Meekland Avenue) XXXX (19759 Meekland Avenue)
1990	Archer Brothers (19745 Meekland Avenue) Faris, Brian (19759 Meekland Avenue)
1995	Archer (19743 Meekland Avenue) Archer Brothers (19745 Meekland Avenue) Faris, Brian (19759 Meekland Avenue)
2000	Andrews, William (19743 Meekland Avenue) Archer Brothers Jeep Parts (19745 Meekland Avenue) Archer, Arthur (19755 Meekland Avenue) XXXX (19759 Meekland Avenue)
2005	Andrews, William (19743 Meekland Avenue) Archer Brothers Jeep Parts (19745 Meekland Avenue) Faris, Brian (19755 Meekland Avenue) Johnson, Matthew (19759 Meekland Avenue)
2008	Andrews, William (19743 Meekland Avenue) XXXX (19745 Meekland Avenue) Izon, Juanita; Punzalan, Augusto; Sutherland, Scott (19755 Meekland Avenue) XXXX (19759 Meekland Avenue)

According to the city directories review, the subject property has been occupied by various residential tenants and an automotive parts sales/storage facility from at least 1980 until at

least 2008. Environmental concerns associated with the historical use as an automotive parts sales and storage facility are further discussed in Section 3.1.

4.0 REGULATORY AGENCY RECORDS REVIEW

4.1 REGULATORY AGENCIES

Local and state agencies, such as environmental health departments, fire prevention bureaus, and building and planning departments are contacted to identify any current or previous reports of hazardous materials use, storage, and/or unauthorized releases that may have impacted the subject property. In addition, information pertaining to Activity and Use Limitations (AULs), defined as legal or physical restrictions, or limitations on the use of, or access to, a site or facility, is requested. Specifically AULs are comprised of engineering controls (EC) and institutional controls (IC).

Engineering Controls are defined as physical modifications to a site or facility to reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or ground water on the property. *Institutional Controls* are defined as a legal or administrative restriction on the use of, or access to, a site or facility to 1) reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or ground water on the property, or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment.

4.1.1 HEALTH DEPARTMENT

On July 16, 2010, the Alameda County Environmental Health Department (ACEHD) was contacted to review files on the subject property and nearby sites of concern. Files at the ACEHD may contain information regarding hazardous materials storage, as well as information regarding unauthorized releases of petroleum hydrocarbons or other contaminants that may affect the soil or groundwater in the area.

No information indicating current or prior use or storage of hazardous materials, or the existence of AULs was on file for the subject property with the ACEHD.

4.1.2 FIRE DEPARTMENT

On July 16, 2010, the Hayward Fire Department (HFD) was contacted for information on the subject property to identify any evidence of previous or current hazardous material usage.

No information indicating current or prior use or storage of hazardous materials, or the existence of AULs was on file for the subject property with the HFD.

4.1.3 BUILDING DEPARTMENT

On July 20, 2010, the Alameda County Building Department (ACBD) was visited for information on the subject property in order to identify historical tenants and property use. Please refer to the following table for a listing of permits reviewed:

Building Permits Reviewed

Year(s)	Owner/Applicant	Description of Permit / Building Use
1949	Howard Flores	New dwelling/Residential (19755 Meekland Avenue)
1960	Archer Brothers	Auto parts house/Auto parts sales and storage
1960-1961	Arthur Archer	Permit for three warehouse buildings/Auto parts

Year(s)	Owner/Applicant	Description of Permit / Building Use
		and tire warehouse storage (19745 Meekland Avenue)
1961	Arthur Archer	Alter attached garage/Residential (19755 Meekland Avenue)
1961-1963	Arthur Archer	Convert attached garages to dwelling use/Residential (19745 Meekland Avenue)
1962	Arthur Archer	Demolish attached garage and building new detached garage/Residential and auto parts sales and storage (19755 Meekland Avenue)
1962	Arthur Archer	Addition to dwelling/Residential (19755 & 19759 Meekland Avenue)
1963	Arthur Archer	Install welding plug/Auto parts sales and storage (19755 Meekland Avenue)
1967	Arthur Archer	Alter dwelling (convert storage to bedroom)/Residential (19755 Meekland Avenue)
1984	Arthur Archer	Remodel dwelling/Residential (19759 Meekland Avenue)

According to the building records review, the subject property has been occupied by at least one residential dwelling since 1949. The subject property was then occupied by an automotive parts sales and storage facility from at least 1960. Environmental concerns associated with the historical use as an automotive parts sales and storage facility are further discussed in Section 3.1.

4.1.4 PLANNING DEPARTMENT

On July 20, 2010, the Alameda County Planning Department (ACPD) was visited for information on the subject property in order to identify AULs associated with the subject property.

No information indicating the existence of AULs was on file for the subject property with the HPD.

4.1.5 DEPARTMENT OF OIL AND GAS

Department of Oil and Gas (DOG) maps concerning the subject property and nearby properties were reviewed. DOG maps contain information regarding oil and gas development.

According to the DOG map, there are no oil or gas wells within 500 feet of the subject property. No environmental concerns were noted during the DOG map review.

4.1.6 OTHER AGENCY

On July 19, 2010, the State Water Resources Control Board Geotracker Database (SWRCB Geotracker Database) was accessed to review files on the subject property and nearby sites of concern. Files on the SWRCB Geotracker Database may contain information regarding hazardous materials storage, as well as information regarding unauthorized releases of petroleum hydrocarbons or other contaminants that may affect the soil or groundwater in the area.

No information indicating current or prior use or storage of hazardous materials, or the existence of AULs was on file for the subject property on the SWRCB Geotracker Database.

5.0 REGULATORY DATABASE RECORDS REVIEW

The following information was obtained through a search of electronically compiled federal, state, county, and city databases provided by Track Info Services Environmental FirstSearch. The database search includes regulatory agency lists of known or potential hazardous waste sites, landfills, hazardous waste generators, and disposal facilities in addition to sites under investigation. The information provided in this report was obtained from publicly available sources. The locations of the sites listed in this report are plotted with a geographic information system utilizing geocoding of site addresses. The accuracy of these locations is generally +/- 300 feet. AEI's field representative has attempted to confirm the locations of listings on or adjacent to the subject property. Refer to the radius map (Appendix B: Regulatory Database Review Report) for the locations of the sites in relation to the subject property.

Migration of petroleum hydrocarbon or volatile organic compound (VOC) contamination is generally via groundwater. Therefore, only those contaminant release sites located hydrologically upgradient relative to the subject property are expected to represent a potential environmental concern to the subject property. Contaminated sites located hydrologically downgradient of the subject property are not expected to represent a potential threat to the groundwater quality beneath the subject property. Sites that are situated hydrologically cross-gradient relative to the subject property are not expected to represent a concern unless close proximity allows for the potential of lateral migration. As discussed in Section 2.3, groundwater in the vicinity of the subject property is inferred to flow to the west. The migration of VOC contaminants in the vapor phase does have the potential to impact properties; however, evaluation of vapor phase migration and intrusion is beyond the scope of this assessment.

Database	Target Property	Adjacent Property	Search Distance (Miles)	0.125	0.25	0.5	1-mile	Total
NPL			1	0	0	0	0	0
DELISTED NPL			1	0	0	0	0	0
CERCLIS			0.5	0	0	0	-	0
CERCLIS NFRAP			0.5	0	0	0	-	0
RCRA-TSD			1	0	0	0	0	0
RCRA-LQG			0.25	0	0	-	-	0
RCRA-SQG			0.25	0	1	-	-	1
RCRA CORRACTS			1	0	0	0	0	0
US ENG CONTROLS			0.5	0	0	0	-	0
US INST CONTROLS			0.5	0	0	0	-	0
ERNS			0.5	0	0	0	-	0
SHWS (Spills, SLIC, Envirostor, Historical Cal Sites)			1	0	0	0	1	1
SWLF			0.5	0	0	0	-	0

Database	Target Property	Adjacent Property	Search Distance (Miles)	0.125	0.25	0.5	1-mile	Total
UST			0.25	1	0	-	-	1
LUST			0.5	2	2	4	-	8
STATE IC/EC			TP	-	-	-	-	0
VCP			0.5	0	0	0	-	0
STATE/TRIBAL BROWNFIELD			0.5	0	0	0	-	0
ORPHAN			1	-	-	-	-	0
NON-ASTM DATABASES			TP/ADJ	-	-	-	-	0

The subject property was not identified during the regulatory database search. Additionally, other sites are discussed in detail below due to their relative proximity to the subject property, the nature of the listing, and/or hydrological position relative to the subject property.

Site Name: Durham Transportation Database(s): LUST, UST Address: 19984 Meekland Avenue Distance: 175 feet Direction: Southeast
Comments: According to the regulatory database, the Durham Transportation site is identified as a LUST site due to the unauthorized release of gasoline that impacted Other groundwater (uses other than drinking water), discovered in 1992. The site was issued a Case Closed status by the Alameda County Local Oversight Program (LOP) on May 17, 2006. Based on the estimated direction of groundwater flow (cross-gradient), and the current regulatory status, this site is not expected to represent a significant environmental concern.

Site Name: Hoang's Auto Care Database(s): LUST Address: 20009 Meekland Avenue Distance: 325 feet Direction: Southeast
Comments: According to the regulatory database, the Hoang's Auto Care site is identified as a LUST site due to the unauthorized release of gasoline that impacted soil only. The site was issued a Case Closed status by the Alameda County Local Oversight Program (LOP) on July 17, 1995. Based on the estimated direction of groundwater flow (cross-gradient), soil only impact, and the current regulatory status, this site is not expected to represent a significant environmental concern.

Based on the relative distance from the subject property, inferred direction of groundwater flow, and/or regulatory status, the remaining listed sites are not expected to represent a significant environmental concern.

6.0 INTERVIEWS AND USER PROVIDED INFORMATION

6.1 INTERVIEWS

Pursuant to ASTM E1527-05, the following interviews were performed during this investigation in order to obtain information indicating RECs in connection with the subject property.

6.1.1 INTERVIEW WITH OWNER

The subject property owner representatives, Ms. Patricia Duran and Ms. Christine Nguyen, were not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

6.1.2 INTERVIEW WITH KEY SITE MANAGER

Due to the unoccupied nature of the subject property, AEI was not escorted during the on-site inspection. Therefore, an interview with a key site manager was not conducted.

6.1.3 PAST OWNERS, OPERATORS AND OCCUPANTS

Interviews with past owners and occupants regarding historical onsite operations were not reasonably ascertainable. However, based on information obtained from other sources including aerials, city directories, building records, and interviews, it is likely that the information provided by past owners and operators would have been duplicative.

6.1.4 INTERVIEW WITH OTHERS

Information obtained during interviews with local government officials is incorporated into the appropriate segments of this section.

6.2 USER PROVIDED INFORMATION

User provided information is intended to help identify the possibility of RECs in connection with the subject property. According to ASTM E1527-05 and EPA's AAI Rule, the following items should be researched by the prospective landowner or grantee, and the results of such inquiries may be provided to the environmental professional. The responsibility for qualifying for Landowner Liability Protections (LLPs) by conducting the following inquiries ultimately rests with the User, and providing the following information to the environmental professional would be prudent if such information is available.

6.2.1 ENVIRONMENTAL LIENS

AEI was not informed by the User, Alameda County Redevelopment Agency, of any environmental cleanup liens encumbering the subject property that are filed or recorded under federal, tribal, state or local law.

6.2.2 ACTIVITY AND LAND USE LIMITATIONS

AEI was not informed by the User of any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state or local law.

6.2.3 SPECIALIZED KNOWLEDGE

AEI was not informed by the User of any specialized knowledge or experience related to the subject property or nearby properties.

6.2.4 VALUATION REDUCTION FOR ENVIRONMENTAL ISSUES

The User did not indicate to AEI any information to suggest that the valuation of the subject property is significantly less than the valuation for comparable properties due to environmental factors.

6.2.5 COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

The User did not inform AEI of any commonly known or reasonably ascertainable information about the subject property which aided AEI in identifying conditions indicative of a release or threatened release.

6.2.6 KNOWLEDGE OF PRESENCE OR LIKELY PRESENCE OF CONTAMINATION

The User did not inform AEI of any obvious indicators that pointed to the presence or likely presence of contamination at the subject property.

6.2.7 PREVIOUS REPORTS AND OTHER PROVIDED DOCUMENTATION

No prior reports or relevant documentation in association with the subject property were made available to AEI during the course of this investigation.

7.0 SITE INSPECTION AND RECONNAISSANCE

On July 20, 2010, a site reconnaissance of the subject property and adjacent properties was conducted by Michael Audibert, REA of AEI in order to obtain information indicating the likelihood of recognized environmental conditions at the subject property and adjacent properties as specified in ASTM Standard Practice E1527-05 §8.4.2, 8.4.3 and 8.4.4.

7.1 SUBJECT PROPERTY RECONNAISSANCE FINDINGS

Identified Yes	Identified No	Observation
☐	☒	Hazardous Substances and/or Petroleum Products in Connection with Property Use
☐	☒	Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs / USTs)
☐	☒	Hazardous Substance and Petroleum Product Containers and Unidentified Containers not in Connection with Property Use
☐	☒	Unidentified Substance Containers
☐	☒	Electrical or Mechanical Equipment Likely to Contain Fluids
☐	☒	Interior Stains or Corrosion
☐	☒	Strong, Pungent or Noxious Odors
☐	☒	Pools of Liquid
☐	☒	Drains, Sumps and Clarifiers
☐	☒	Pits, Ponds and Lagoons
☒	☐	Stained Soil or Pavement
☐	☒	Stressed Vegetation
☐	☒	Solid Waste Disposal or Evidence of Fill Materials
☐	☒	Waste Water Discharges
☐	☒	Wells
☐	☒	Septic Systems
☐	☒	Other

The subject property is currently developed with two unoccupied residential dwellings. No hazardous materials or petroleum products are utilized during these activities.

STAINED SOIL OR PAVEMENT

Various minor staining was observed on the concrete areas of the subject property former warehouse footprints and asphalt yard areas. The staining was presumably attributed to typical spills associated with the former handling of automotive parts and fluids on-site. Staining was limited to the concrete and asphalt areas of the yard. No cracks, drains, or other direct conduits were observed in the vicinity of the staining. Based on the lack of cracks, drains, or other direct conduits to the subsurface in the vicinity of the concrete staining, this staining is considered de minimis in nature for the purposes of this report, and does not represent a significant environmental concern.

7.2 NON-ASTM SERVICES

7.2.1 ASBESTOS-CONTAINING BUILDING MATERIALS

OSHA

For buildings constructed prior to 1981, the Code of Federal Regulations (29 CFR 1926.1101 and 29 CFR 1910.1001) define presumed asbestos-containing material (PACM) as 1. Thermal System Insulation (TSI), e.g., boiler insulation, pipe lagging, fireproofing; and 2. Surfacing Materials, e.g., acoustical ceilings. Building owners/employers are responsible for locating the presence and quantity of PACM. Building Owners/employers can rebut installed material as PACM by either having an inspection in accordance with Asbestos Hazard Emergency Response Act (AHERA) (40 CFR Part 763, Subpart E) or hiring an accredited inspector to take bulk samples of the suspect material.

Typical materials not covered by the presumptive rule include but are not limited to: floor tiles and adhesives, wallboard systems, siding and roofing. Building materials such as wallboard systems may contain asbestos but unless a building owner/employer has specific knowledge or should have known through the exercise of due diligence that these other materials contain asbestos, the standard does not compel the building owner to sample these materials.

NESHAP

The applicability of the EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Chapter 61, Subpart M) apply to the owner or operator of a facility where an inspection for the presence of asbestos-containing materials (ACM), including Category I (asbestos containing packings, gaskets, resilient floor coverings and asphalt roofing products), and Category II (all remaining types of non-friable asbestos containing material not included in Category I that when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure), non-friable ACM must occur prior to the commencement of demolition or renovation activities. NESHAP defines ACM as any material or product that contains *greater than* 1% asbestos. It should be noted that the NESHAP regulation applies to all facilities regardless of construction date, including: 1. Any institutional, commercial, public, industrial, or residential structure, installation, or building; 2. Any ship; and 3. Any active or inactive waste disposal site. This requirement is typically enforced by the EPA or by local air pollution control/air quality management districts.

The information below is for general informational purposes only and does not constitute an asbestos survey. In addition, the information is not intended to comply with federal, state or local regulations in regards to ACM.

Due to the age of the subject property buildings, there is a potential that ACMs are present. The condition and friability of the identified suspect ACMs is noted in the following table:

Suspect Asbestos Containing Materials (ACMs)

Material	Location	Friable	Condition
Drywall Systems	Throughout Buildings' Interior	No	Fair
Vinyl Flooring Systems	Throughout Kitchen and Bathroom Areas	No	Poor
Roofing Systems	Roof	Not Inspected	Not Inspected

All observed suspect ACMs were in fair to good condition with the exception of vinyl flooring systems in the kitchen and bathroom areas. The identified suspect ACMs would need to be sampled to confirm the presence or absence of asbestos prior to any renovation or demolition

activities to prevent potential exposure to workers and/or building occupants. Based on the potential presence of ACMs, AEI recommends the property owner implement an Operations and Maintenance (O & M) Plan which stipulates that assessment, repair and maintenance of damaged materials be performed to protect the health and safety of the building occupants.

7.2.2 LEAD-BASED PAINT

Lead-based paint (LBP) is defined as any paint, varnish, stain, or other applied coating that has ≥1 mg/cm^2 (5,000 µg/g or 5,000 ppm) or more of lead by federal guidelines; state and local definitions may differ from the federal definitions in amounts ranging from 0.5 mg/cm^2 to 2.0 mg/cm^2. Section 1017 of the Housing and Urban Development (HUD) Guidelines, Residential Lead-Based Paint Hazard Reduction Act of 1992, otherwise known as "Title X", defines a LBP hazard is "any condition that causes exposure to lead that would result in adverse human health effects" resulting from lead-contaminated dust, bare, lead-contaminated soil, and/or lead-contaminated paint that is deteriorated or present on accessible, friction, or impact surfaces. Therefore, under Title X, intact lead-based paint on most walls and ceilings would not be considered a "hazard", although the paint should be maintained and its condition and monitored to ensure that it does not deteriorate and become a hazard. Additionally, Section 1018 of this law directed HUD and EPA to require the disclosure of known information on lead-based paint and lead-based paint hazards before the sale or lease of most housing built before 1978. Most private housing, public housing, federally owned or subsidized housing are affected by this rule.

Lead-containing paint (LCP) is defined as any paint with any detectable amount of lead present in it. It is important to note that LCP may create a lead hazard when being removed. The condition of these materials must be monitored when they are being disturbed. In the event LCP is subject to abrading, sanding, torching and/or cutting during demolition or renovation activities, there may be regulatory issues that must be addressed.

The information below is for general informational purposes only and does not constitute a lead hazard evaluation. In addition, the information is not intended to comply with federal, state or local regulations in regards to lead-containing paints.

In buildings constructed after 1978, it is unlikely that LBP is present. Structures built prior to 1978 and especially prior to the 1960's should be expected to contain LBP.

Due to the age of the subject property buildings, there is a potential that LBP is present. During the site inspection, damaged wall and trim painted surfaces were observed in the general living areas, bedrooms, and exterior wall systems of both on-site buildings. Based on the potential presence of LBP, AEI recommends the property owner implement an Operations and Maintenance (O & M) Plan which stipulates that the assessment, repair and maintenance of damaged painted surfaces be performed to protect the health and safety of the building occupants. Local regulations may apply to lead-based paint in association with building demolition/renovations and worker/occupant protection. Actual material samples would need to be collected or an XRF survey performed in order to determine if LBP is present. It should be noted that construction activities that disturb materials or paints containing *any amount* of lead may be subject to certain requirements of the OSHA lead standard contained in 29 CFR 1910.1025 and 1926.62.

7.2.3 RADON

Radon is a naturally-occurring, odorless, invisible gas. Natural radon levels vary and are closely related to geologic formations. Radon may enter buildings through basement sumps or other openings.

The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not requested as part of this investigation. According to the US EPA, the radon zone level for the area is Zone 2, which has a predicted average indoor screening level between 2 pCi/L and 4 pCi/L, at or below the action level of 4.0 pCi/L set forth by the EPA.

7.2.4 DRINKING WATER SOURCES AND LEAD IN DRINKING WATER

The City of Hayward supplies potable water to the subject property. The most recent water quality report (2009) states that lead levels in the areas water supply were 1.1 parts per billion (ppb) and therefore are well within standards established by the USEPA.

7.2.5 MOLD/INDOOR AIR QUALITY ISSUES

Molds are simple, microscopic organisms, which can often be seen in the form of discoloration, frequently green, gray, white, brown or black. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or is not addressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation, and carpeting often play host to such growth. Mold spores primarily cause health problems through the inhalation of mold spores or the toxins they emit when they are present in large numbers. This can occur primarily when there is active mold growth within places where people live or work.

Mold, if present, may or may not visually manifest itself. Neither the individual completing this inspection, nor AEI has any liability for the identification of mold-related concerns except as defined in applicable industry standards. In short, this Phase I ESA should not be construed as a mold survey or inspection.

AEI Consultants observed interior areas of the subject buildings in order to identify the significant presence of mold. During the on-site reconnaissance, the following obvious visual signs of mold growth or conditions conducive for mold growth were observed.

Location	Size of Area Affected	Condition
19745 Meekland Avenue: Living and kitchen drywall areas	50 square feet	Black mold
19745 Meekland Avenue: Window frames	8 square feet	Black mold
19755 Meekland Avenue: Living and	20 square feet	Black mold

Location	Size of Area Affected	Condition
kitchen drywall areas		
19755 Meekland Avenue: Window frames	4 square feet	Black mold

Please refer to Appendix A for related photographs.

Although typically not included in the scope of work for a *Phase I ESA*, the presence of the mold may pose a health and safety concern to any subsequent occupants and/or construction workers during future renovation activities. Based upon the amount of fungal growth observed, AEI recommends a certified mold remediation contractor be consulted to conduct removal of all water-damaged building materials and visible mold within the affected areas.

Repairs to prevent water intrusion and damage in the impacted area should also be performed. AEI's remediation recommendations are based upon accepted guidelines determined by the American Conference of Industrial Hygienists (ACGIH), New York City Department of Health (NYCDOH), and Environmental Protection Agency (EPA). Engineering controls during all remediation of the affected areas may include, but are not limited to: contamination source control, critical/isolation barriers, utilizing air scrubbers/negative pressure enclosure system, HEPA vacuuming and detailed cleaning. In addition, AEI recommends that post-remediation verification be conducted by a third-party consultant to ensure successful remediation of the affected area.

Furthermore, in order to assist onsite staff with proper methods of mold growth evaluation and remediation, as well as proper training for onsite maintenance personnel, it would be prudent for the property owner to implement a Mold/Moisture Plan (MMP).

This activity was not designed to discover all areas which may be affected by mold growth on the subject property. Rather, it is intended to give the client an indication if significant (based on observed areas) mold growth is present at the subject property. Additional areas of mold not observed as part of this limited assessment, possibly in pipe chases, HVAC systems and behind enclosed walls and ceilings, may be present on the subject property.

7.3 ADJACENT PROPERTY RECONNAISSANCE FINDINGS

Identified Yes	Identified No	Observation
☐	☒	Hazardous Substances and/or Petroleum Products in Connection with Property Use
☐	☒	Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs / USTs)
☐	☒	Hazardous Substance and Petroleum Product Containers and Unidentified Containers not in Connection with Property Use
☐	☒	Unidentified Substance Containers
☒	☐	Electrical or Mechanical Equipment Likely to Contain Fluids
☐	☒	Interior Stains or Corrosion
☐	☒	Strong, Pungent or Noxious Odors
☐	☒	Pool of Liquid
☒	☐	Drains and Sumps
☐	☒	Pits, Ponds and Lagoons
☐	☒	Stained Soil or Pavement
☐	☒	Stressed Vegetation
☐	☒	Solid Waste Disposal or Evidence of Fill Materials
☐	☒	Waste Water Discharges
☐	☒	Wells
☐	☒	Septic Systems
☒	☐	Other

ELECTRICAL OR MECHANICAL EQUIPMENT LIKELY TO CONTAIN FLUIDS

One pole-mounted transformer was observed on the adjacent site to the south during the site inspection. No spills, staining or leaks were observed on or around the transformer. Based on the good condition of the equipment, the transformer is not expected to represent a significant environmental concern.

DRAINS AND SUMPS

Various storm water drains were observed in the adjacent city street and parking areas during the site inspection. No hazardous substances or petroleum products were observed in the vicinity of these drains. Based on the use of the drains solely for storm water runoff, the presence of the drains is not expected to represent a significant environmental concern.

OTHER

Railroad (Southern Pacific) tracks were observed adjacent to the west of the subject property lot. Railroad spurs represent environmental concerns due to the historical application of oils containing polychlorinated biphenyls (PCBs), herbicides, and arsenic for pest and weed control, as well as the potential presence of creosote on the rail ties, and the historical common practice of using coal cinders for track fill material. The railroad tracks are surrounded by gravel. Based on the presence of gravel, the use of oils, arsenic, and herbicides associated with weed or pest control is expected to be minimal, and therefore does not represent a significant environmental concern.

8.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

By signing this report, the senior author declares that, to the best of his or her professional knowledge and belief, he or she meets the definition of *Environmental Professional* as defined in §312.10 of 40 CFR Part 312.

The senior author has the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. The senior author has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

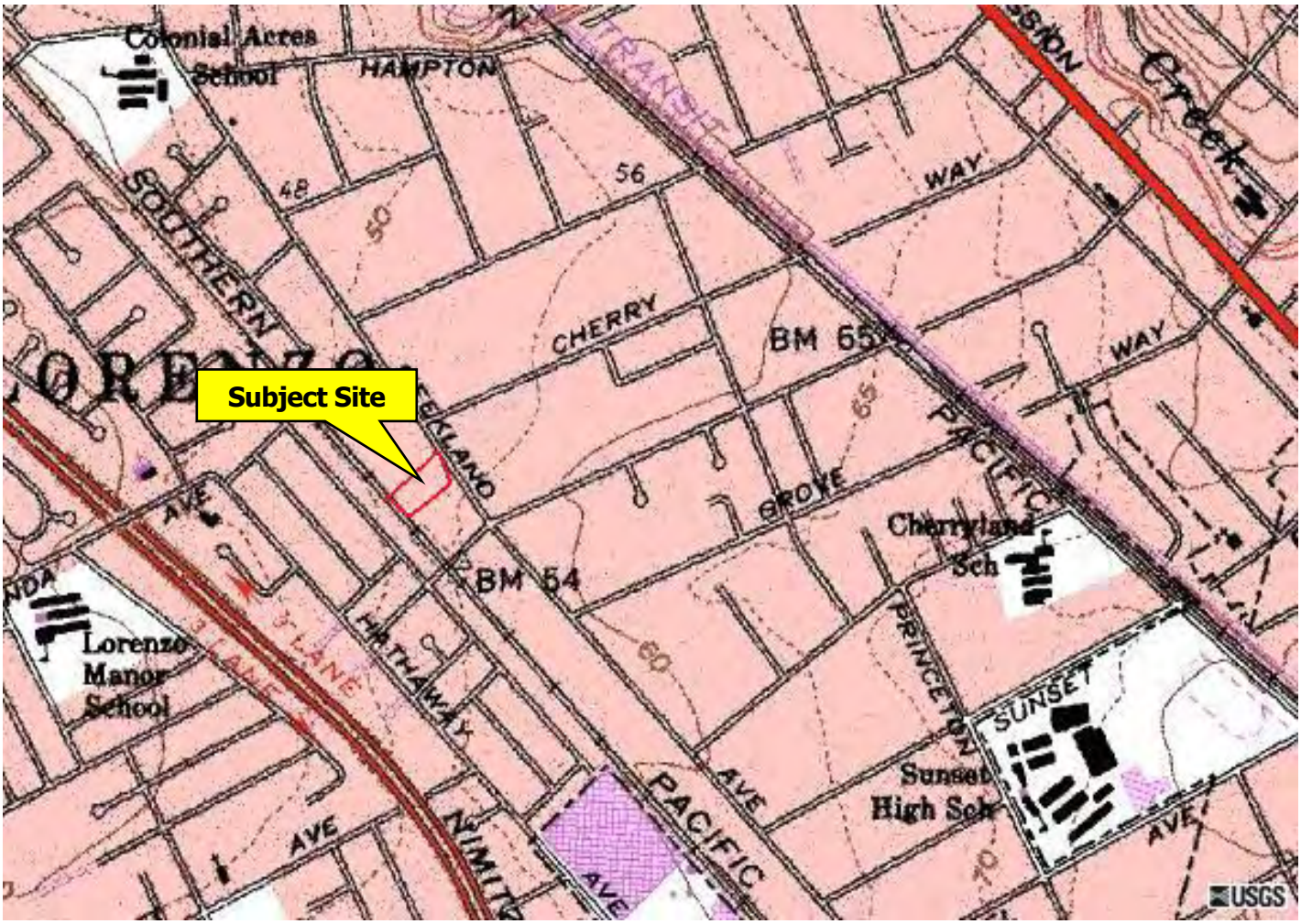
Prepared By:

Michael Audibert, REA
Project Manager

Reviewed By:

Steve Kovach, REA
Senior Author

FIGURES



N

USGS TOPOGRAPHIC MAP
Hayward QUADRANGLE
Created 1978

SITE LOCATION MAP	
19745 & 19755 Meekland Avenue	
Hayward, California 94541	
FIGURE 1 Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

LEGEND

N

SUBJECT PROPERTY LINE

Groundwater Flow Direction

SITE MAP

19745 & 19755 Meekland Avenue
Hayward, CA 94541

FIGURE 2
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1946

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1958

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1968

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1970

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1980

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 1993

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 2004

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

N

Source: USGS
Year: 2009

AERIAL PHOTOGRAPH

19745 & 19755 Meekland Avenue
Hayward, California 94541

FIGURE 3
Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

APPENDIX A

PROPERTY PHOTOGRAPHS

1. View of the front (east) side of 19745 Meekland Avenue building.

2. View of the front (east) side of the 19755 Meekland Avenue building.

3. View of the north side of the 19745 Meekland Avenue building.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

4. View of the north side of the 19755 Meekland Avenue building.

5. View of south side of the 19745 Meekland Avenue building.

6. View of the south side of the 19755 Meekland Avenue building.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

7. View of the rear (west) side of the 19745 Meekland Avenue building.

8. View of the rear (west) side of the 19755 Meekland Avenue building.

9. View of the western portion of the lot, facing west.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

10. View of the western portion of the lot, facing east.

11. View of the adjacent property north (residential dwelling).

12. View of the adjacent property east (residential dwelling) beyond Meekland Avenue.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

13. View of additional adjacent properties east (residential dwellings) beyond Meekland Avenue.

14. View of the adjacent properties south (residential apartment buildings).

15. View of the adjacent properties west (railroad tracks, followed by residential dwellings).

PROPERTY PHOTOGRAPHS

19745 & 19755 Meekland Avenue
Hayward, CA 94541

Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

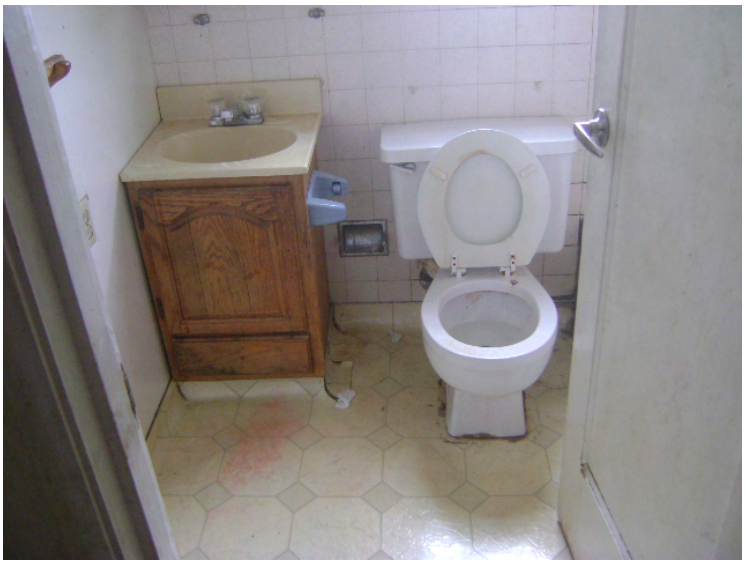
16. View of the living area of the 19745 Meekland Avenue building.

17. View of the living area of the 19755 Meekland Avenue building.

18. View of the kitchen area of the 19745 Meekland Avenue building.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

19. View of the kitchen area of the 19755 Meekland Avenue building.



20. View of the bathroom of the 19745 Meekland Avenue building.

21. View of the bathroom of the 19755 Meekland Avenue building.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

22. View of a bedroom area showing mold growth in the 19755 Meekland Avenue building.

23. View of drywall mold growth in the 19745 Meekland Avenue building.

24. View of window frame mold in the 19745 Meekland Avenue building.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

25. View of damaged exterior paint of the 19745 Meekland Avenue building.

26. View of damaged exterior paint of the 19755 Meekland Avenue building.

27. View of the location of a former residential building on-site.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

28. View of the location of a former detached private garage on-site.

29. View of the location of a former L-shaped warehouse structure on-site.

30. View of the location of three former warehouse structures on-site.

PROPERTY PHOTOGRAPHS	
19745 & 19755 Meekland Avenue	
Hayward, CA 94541	
Job No: 289963	AEI CONSULTANTS ENVIRONMENTAL & ENGINEERING SERVICES

31. View of a former on-site warehouse building footprint.

32. View of concrete staining in the area of the former warehouse buildings.

33. View of an adjacent pole-mounted transformer (south).

PROPERTY PHOTOGRAPHS

19745 & 19755 Meekland Avenue
Hayward, CA 94541

Job No: 289963

AEI CONSULTANTS
ENVIRONMENTAL & ENGINEERING SERVICES

APPENDIX B

REGULATORY DATABASE

TRACK INFO SERVICES, LLC

Environmental FirstSearch™ Report

Target Property:

19745 MEEKLAND AVE

HAYWARD CA 94541

Job Number: SF_289963

PREPARED FOR:

AEI Consultants, Inc.

2500 Camino Diablo

Walnut Creek, CA 94597

07-02-10

Tel: (866) 664-9981 *Fax: (818) 249-4227*

Environmental FirstSearch
Search Summary Report

Target Site: 19745 MEEKLAND AVE
HAYWARD CA 94541

FirstSearch Summary

Database	Sel	Updated	Radius	Site	1/8	1/4	1/2	1/2>	ZIP	TOTALS
NPL	Y	05-01-10	1.00	0	0	0	0	0	0	0
NPL Delisted	Y	05-01-10	0.50	0	0	0	0	-	0	0
CERCLIS	Y	04-29-10	0.50	0	0	0	0	-	0	0
NFRAP	Y	04-29-10	0.50	0	0	0	0	-	0	0
RCRA COR ACT	Y	04-21-10	1.00	0	0	0	0	0	0	0
RCRA TSD	Y	04-21-10	1.00	0	0	0	0	0	0	0
RCRA GEN	Y	04-21-10	0.25	0	0	1	-	-	0	1
RCRA NLR	Y	02-16-10	0.25	0	0	0	-	-	0	0
Federal Brownfield	Y	04-19-10	0.50	0	0	0	0	-	0	0
ERNS	Y	04-29-10	0.12	0	0	-	-	-	1	1
Tribal Lands	Y	12-01-05	1.00	0	0	0	0	0	3	3
State/Tribal Sites	Y	02-08-10	1.00	0	0	0	0	1	3	4
State Spills 90	Y	06-22-10	0.12	0	0	-	-	-	0	0
State/Tribal SWL	Y	06-21-10	0.50	0	0	0	0	-	0	0
State/Tribal LUST	Y	06-22-10	0.50	0	2	2	4	-	1	9
State/Tribal UST/AST	Y	03-10-10	0.25	0	1	0	-	-	0	1
State/Tribal EC	Y	NA	0.50	0	0	0	0	-	0	0
State/Tribal IC	Y	03-02-10	0.50	0	0	0	0	-	0	0
State/Tribal VCP	Y	02-08-10	0.50	0	0	0	0	-	0	0
State/Tribal Brownfields	Y	NA	0.50	0	0	0	0	-	0	0
State Permits	Y	06-22-10	0.12	0	0	-	-	-	0	0
State Other	Y	02-08-10	0.25	0	0	0	-	-	0	0
Federal IC/EC	Y	06-02-10	0.50	0	0	0	0	-	0	0
- TOTALS -				0	3	3	4	1	8	19

Notice of Disclaimer

Due to the limitations, constraints, inaccuracies and incompleteness of government information and computer mapping data currently available to TRACK Info Services, certain conventions have been utilized in preparing the locations of all federal, state and local agency sites residing in TRACK Info Services's databases. All EPA NPL and state landfill sites are depicted by a rectangle approximating their location and size. The boundaries of the rectangles represent the eastern and western most longitudes; the northern and southern most latitudes. As such, the mapped areas may exceed the actual areas and do not represent the actual boundaries of these properties. All other sites are depicted by a point representing their approximate address location and make no attempt to represent the actual areas of the associated property. Actual boundaries and locations of individual properties can be found in the files residing at the agency responsible for such information.

Waiver of Liability

Although TRACK Info Services uses its best efforts to research the actual location of each site, TRACK Info Services does not and can not warrant the accuracy of these sites with regard to exact location and size. All authorized users of TRACK Info Services's services proceeding are signifying an understanding of TRACK Info Services's searching and mapping conventions, and agree to waive any and all liability claims associated with search and map results showing incomplete and or inaccurate site locations.

Environmental FirstSearch
Site Information Report

Request Date:	07-02-10	**Search Type:**	COORD
Requestor Name:	Marisela McCullough	**Job Number:**	SF_289963
Standard:	AAI	**Filtered Report**	

Target Site: 19745 MEEKLAND AVE
HAYWARD CA 94541

Demographics

Sites:	19	**Non-Geocoded:**	8	**Population:**	NA
Radon:	0.5 - 1.9 PCI/L				

Site Location

	Degrees (Decimal)	**Degrees (Min/Sec)**		**UTMs**
Longitude:	-122.11072	-122:6:39	**Easting:**	578420.266
Latitude:	37.677088	37:40:38	**Northing:**	4170155.339
Elevation:	52		**Zone:**	10

Comment

Comment:

Additional Requests/Services

Adjacent ZIP Codes: 1 Mile(s)

ZIP Code	City Name	ST	Dist/Dir	Sel
94578	SAN LEANDRO	CA	0.84 NE	Y
94580	SAN LORENZO	CA	0.17 NW	Y

Services:

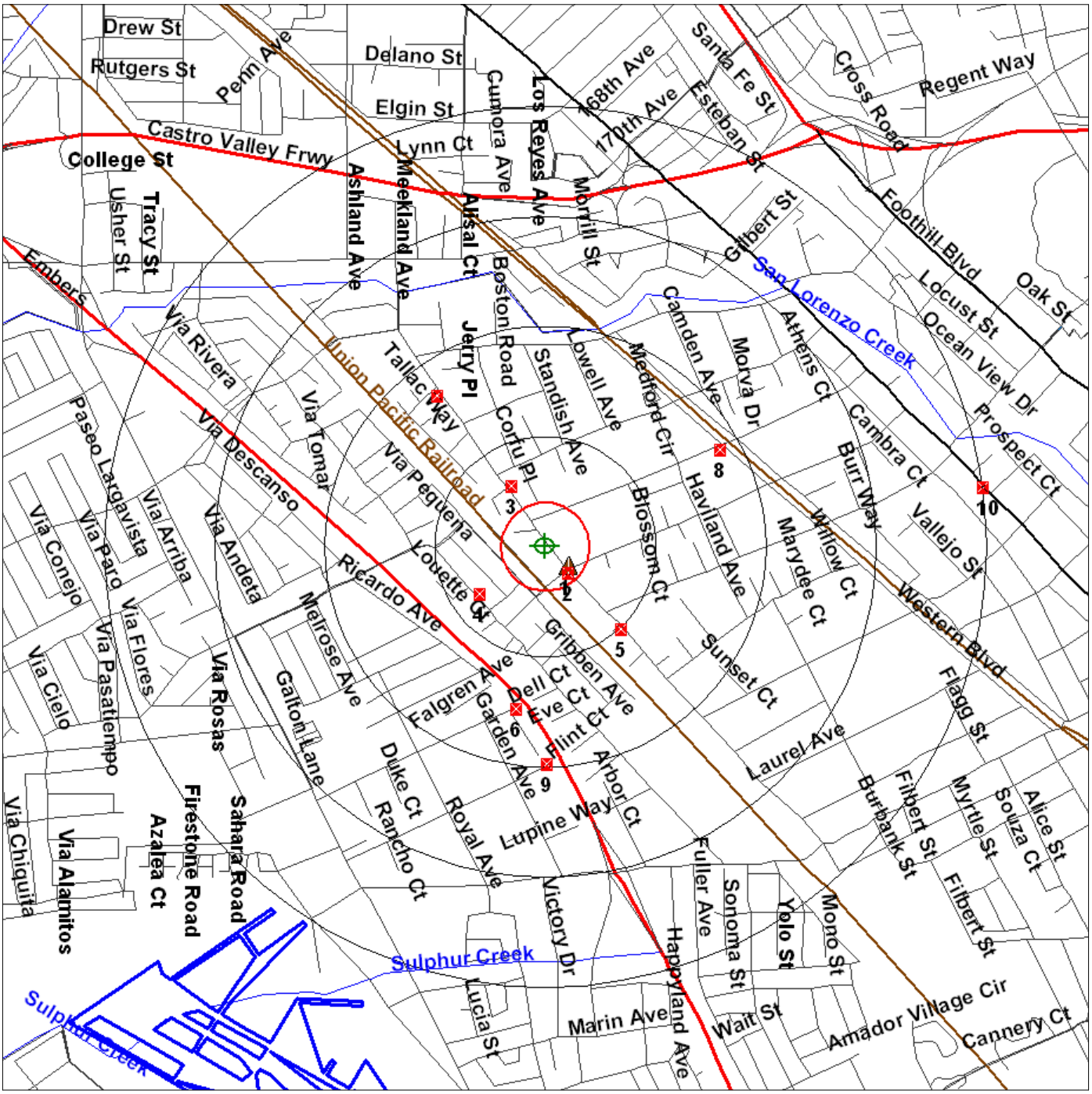
	Requested?	Date
Fire Insurance Maps	No	
Aerial Photographs	No	
Historical Topos	No	
City Directories	No	
Title Search/Env Liens	No	
Municipal Reports	No	
Online Topos	No	

Environmental FirstSearch

1 Mile Radius

Single Map:

19745 MEEKLAND AVE, HAYWARD CA 94541



Source: U.S. Census TIGER Files

Target Site (Latitude: 37.677088 Longitude: -122.11072) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

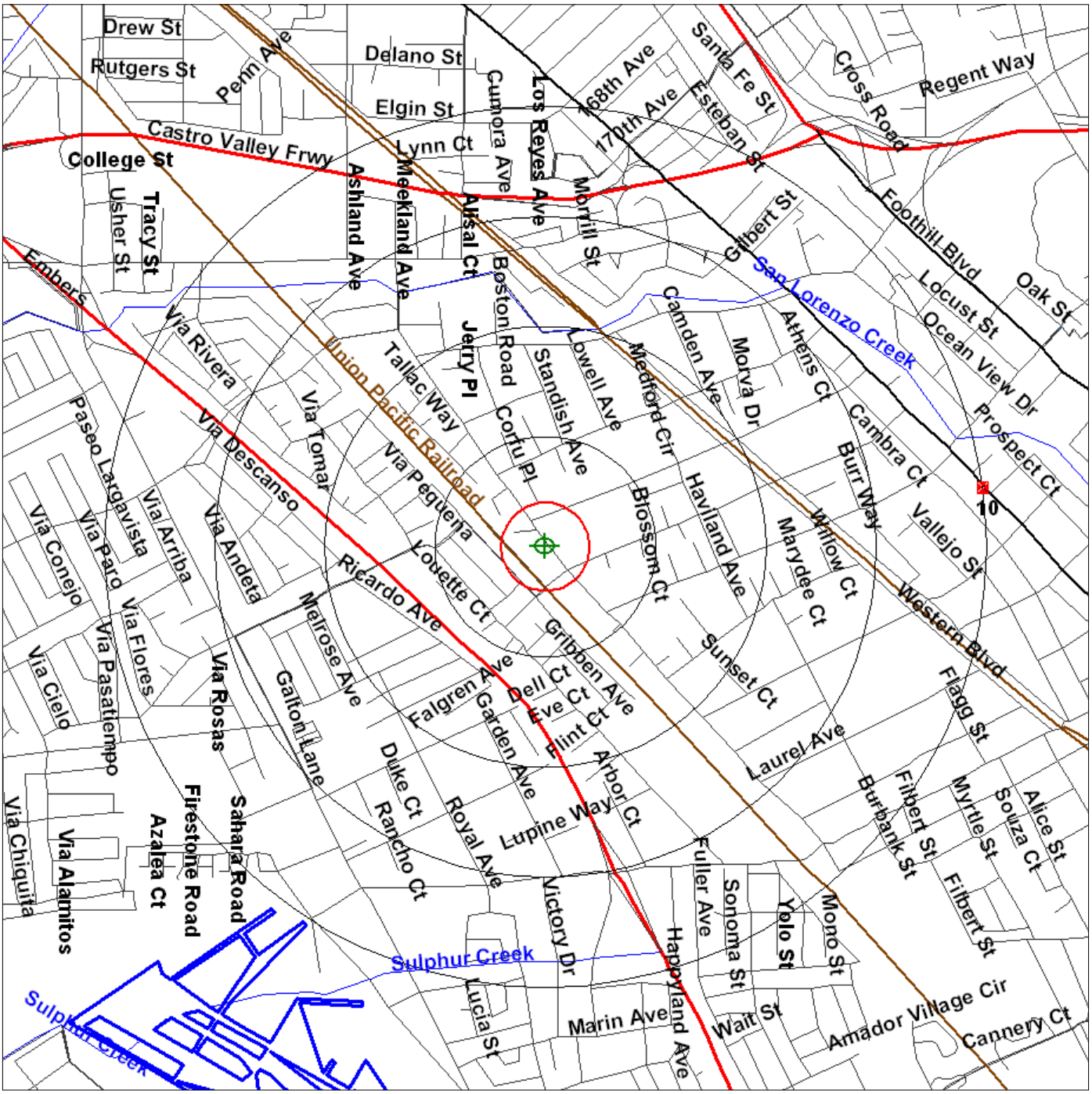
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

1 Mile Radius

AAI: NPL, RCRACOR, STATE, RCRATSD

19745 MEEKLAND AVE, HAYWARD CA 94541



Source: U.S. Census TIGER Files

Target Site (Latitude: 37.677088 Longitude: -122.11072) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

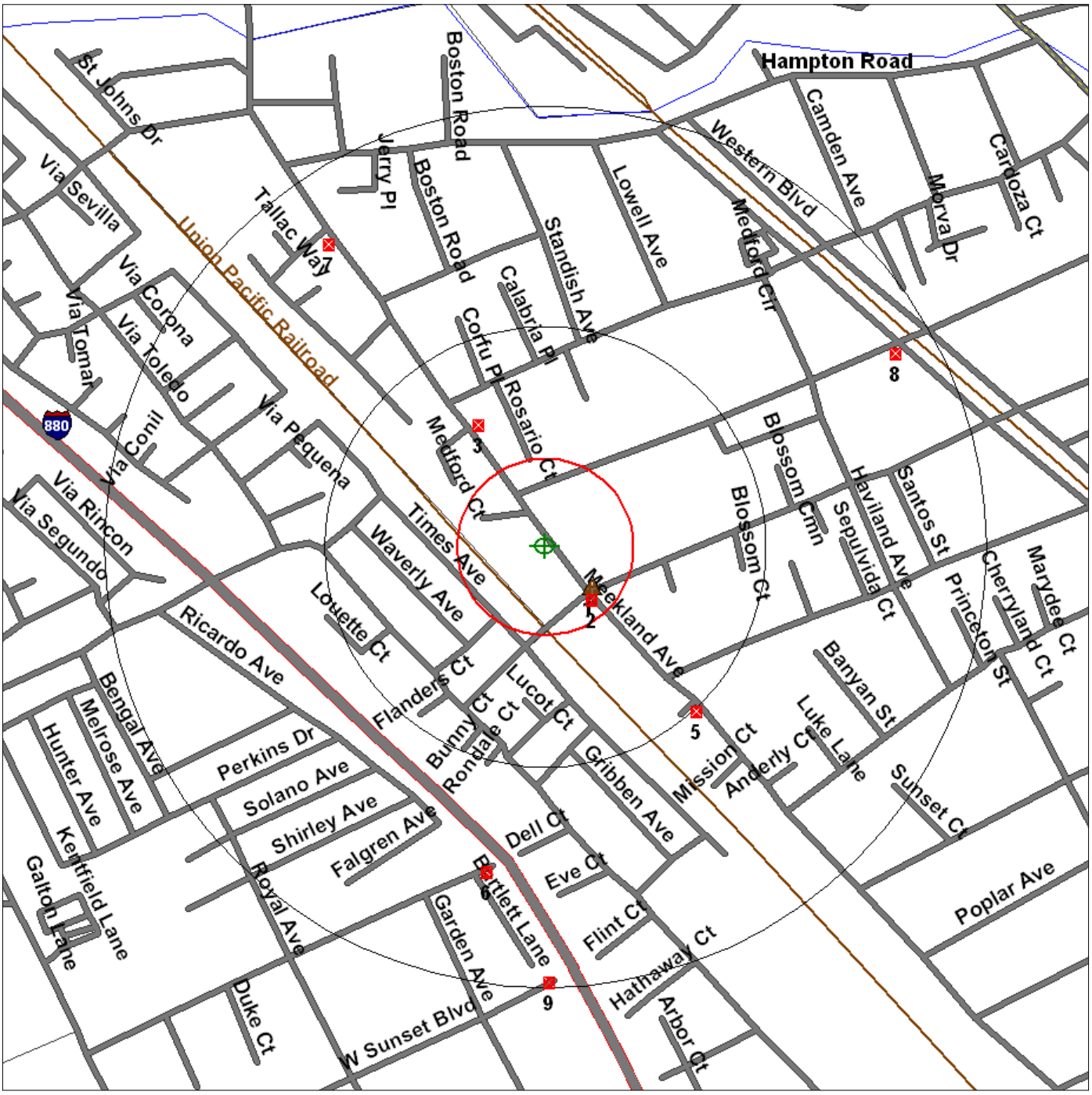
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.5 Mile Radius

AAI: Multiple Databases

19745 MEEKLAND AVE, HAYWARD CA 94541



Source: U.S. Census TIGER Files

Target Site (Latitude: 37.677088 Longitude: -122.11072) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

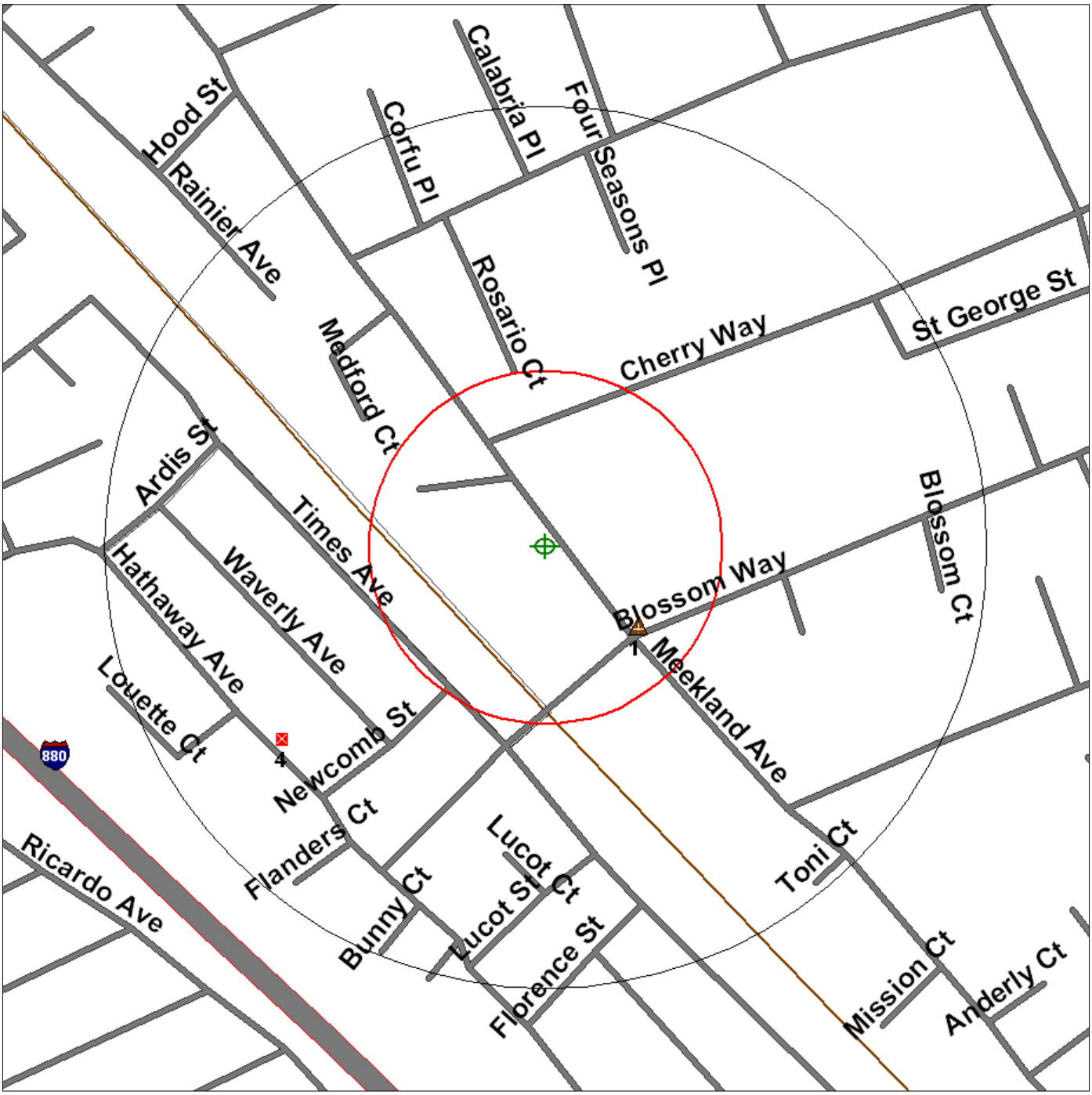
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.25 Mile Radius

AAI: RCRAGEN, UST, RCRANLR, OTHER

19745 MEEKLAND AVE, HAYWARD CA 94541



Source: U.S. Census TIGER Files

Target Site (Latitude: 37.677088 Longitude: -122.11072) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

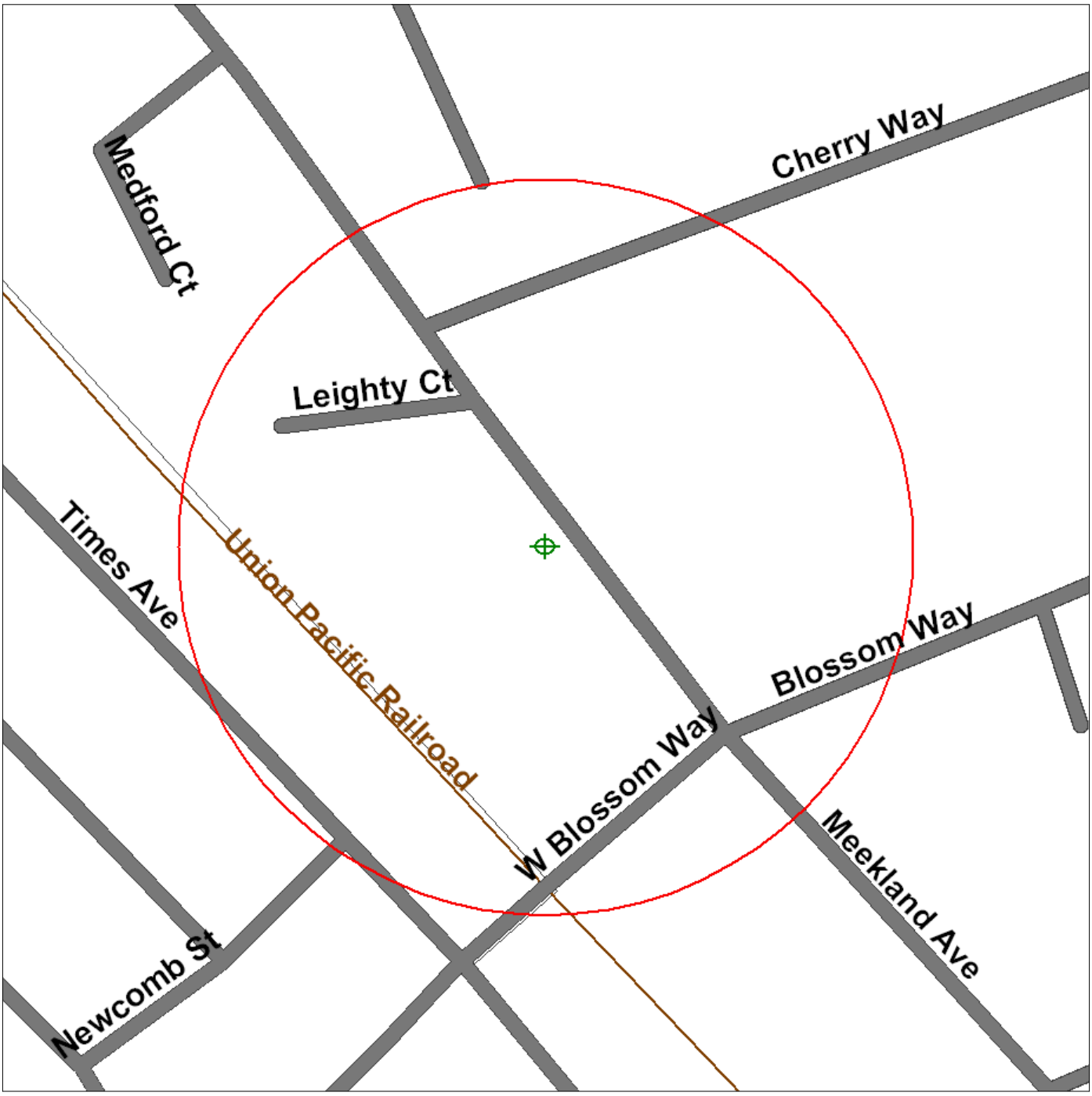
Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch

.12 Mile Radius

AAI: SPILLS90, ERNS, PERMITS

19745 MEEKLAND AVE, HAYWARD CA 94541



Source: U.S. Census TIGER Files

Target Site (Latitude: 37.677088 Longitude: -122.11072) .....

Identified Site, Multiple Sites, Receptor .....

NPL, DELNPL, Brownfield, Solid Waste Landfill (SWL), Hazardous Waste

Triballand.....

Railroads .....

Black Rings Represent 1/4 Mile Radius; Red Ring Represents 500 ft. Radius

Environmental FirstSearch
Target Site Summary Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

TOTAL: 19 **GEOCODED:** 11 **NON GEOCODED:** 8 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.

Environmental FirstSearch
Sites Summary Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

TOTAL: 19 **GEOCODED:** 11 **NON GEOCODED:** 8 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
1	UST	HARBERT TRANSPORTATION SERVICE TISID-STATE12330/ACTIVE	19984 MEEKLAND HAYWARD CA 94541	0.07 SE	+ 4	1
1	LUST	DURHAM TRANSPORTATION T0600100475/COMPLETED - CASE CLO	19984 MEEKLAND HAYWARD CA 94541	0.07 SE	+ 4	3
2	LUST	HOANG S AUTO CARE T0600101166/COMPLETED - CASE CLO	20009 MEEKLAND HAYWARD CA 94541	0.08 SE	+ 4	4
3	LUST	RICHARD S ROOFING SERVICE T06019707405/LEAK BEING CONFIRMED	19356 MEEKLAND HAYWARD CA 94541	0.16 NW	- 2	5
4	RCRAGN	MORGAN BILL TRUCKING CAT080033442/TRANSPORTER	251 LOUETTE CT HAYWARD CA 94541	0.18 SW	- 7	6
5	LUST	BECK ROOFING T0600100163/COMPLETED - CASE CLO	21123 MEEKLAND HAYWARD CA 94541	0.25 SE	+ 8	7
6	LUST	ANDERSON LIFT TRUCK TRANSPORT T0600100074/COMPLETED - CASE CLO	310 BARTLETT HAYWARD CA 94541	0.38 SW	- 2	8
7	LUST	JOSCON AUTO ELECTRIC T0600100758/COMPLETED - CASE CLO	17771 MEEKLAND HAYWARD CA 94541	0.42 NW	- 8	9
8	LUST	CLIFF S FORKLIFT T0600100391/COMPLETED - CASE CLO	21031 WESTERN HAYWARD CA 94541	0.45 NE	+ 8	10
9	LUST	RAS-CO MANUFACTURING COMPANY T0600101947/OPEN - SITE ASSESSME	413 SUNSET HAYWARD CA 94541	0.50 SE	0	12
10	STATE	MONTGOMERY STREET PROJECT CAL60000807/INACTIVE - NEEDS EVA	21659 MISSION BLVD Hayward CA 94541	1.00 NE	+ 33	13

Environmental FirstSearch
Sites Summary Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

TOTAL: 19 **GEOCODED:** 11 **NON GEOCODED:** 8 **SELECTED:** 0

Map ID	DB Type	Site Name/ID/Status	Address	Dist/Dir	ElevDiff	Page No.
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-94580	UNKNOWN CA 94580	NON GC	N/A	14
	ERNS	MILEPOST: 19.1 BLOSSOM WAY NRC-907627/RAILROAD NON-RELEASE	MILEPOST: 19.1 BLOSSOM WAY HAYWARD CA	NON GC	N/A	14
	STATE	FORD STAGING SITE (9TH GRADE A CAL60000465/NO FURTHER ACTION	13900 14TH ST SAN LEANDRO CA 94578	NON GC	N/A	16
	STATE	RIDING GROUP CAL60000625/INACTIVE - ACTION RE	14844-1486 EAST 14TH STREET San Leandro CA 94578	NON GC	N/A	17
	STATE	KIPP KING COLLEGIATE HIGH SCHO CAL60001007/NO FURTHER ACTION	2005 VIA BARRETT SAN LORENZO CA 94580	NON GC	N/A	19
	LUST	UNION PACIFIC RR HAYWARD SIDIN T0600101758/COMPLETED - CASE CLO	WESTERN ST AND SUNSET HAYWARD CA 94541	NON GC	N/A	20
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-94541	UNKNOWN CA 94541	NON GC	N/A	21
	TRIBALLAND	BUREAU OF INDIAN AFFAIRS CONTA BIA-94578	UNKNOWN CA 94578	NON GC	N/A	21

Environmental FirstSearch
Site Detail Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

UST

SEARCH ID: 3 **DIST/DIR:** 0.07 SE **ELEVATION:** 56 **MAP ID:** 1

NAME: HARBERT TRANSPORTATION SERVICE
ADDRESS: 19984 MEEKLAND
HAYWARD CA 94541
Alameda
CONTACT:
SOURCE:

REV: 01/01/94
ID1: TISID-STATE12330
ID2:
STATUS: ACTIVE
PHONE:

UST HISTORICAL DATA

This site was listed in the FIDS Zip Code List as a UST site. The Office of Hazardous Data Management produced the FIDS list. The FIDS list is an index of names and locations of sites recorded in various California State environmental agency databases. It is sorted by zip code and as an index, details regarding the sites were never included.

The UST information included in FIDS as provided by the Office of Hazardous Data Management was originally collected from the SWEEPS database. The SWEEPS database recorded Underground Storage Tanks and was maintained by the State Water Resources Control Board (SWRCB). That agency no longer maintains the SWEEPS database and last updated it in 1994. The last release of that 1994 database was in 1997.

Oversight of Underground Storage Tanks within California is now conducted by Certified Unified Program Agencies referred to as CUPA s. There are approximately 102 CUPA s and Local Oversight Programs (LOP s) in the State of California. Most are city or county government agencies. As of 1998, all sites or facilities with underground storage tanks were required by Federal mandate to obtain certification by designated UST oversight agencies (in this case, CUPA s) that the UST/s at their location were upgraded or removed in adherence with the 1998 RCRA standards.

Information from the FIDS/SWEEPS lists were included in this report search to help identify where underground storage tanks may have existed that were not recorded in CUPA databases or lists collected by us. This may occur if a tank was removed prior to development of recent CUPA UST lists or never registered with a CUPA.

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 7 **DIST/DIR:** 0.07 SE **ELEVATION:** 56 **MAP ID:** 1

NAME: DURHAM TRANSPORTATION
ADDRESS: 19984 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100475
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-0521*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0000047*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Other Groundwater (uses other than drinking water)*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *2006-05-17*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1992-03-03*
ACTION (blank if not reported): *Notice of Responsibility - O*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2006-05-17*
ACTION (blank if not reported): *Closure/No Further Action Letter - 20060517*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2006-05-17*
ACTION (blank if not reported): *Closure/No Further Action Letter - 20060517*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Excavate and Dispose*

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE
MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):

- Continued on next page -

Environmental FirstSearch
Site Detail Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 7 **DIST/DIR:** 0.07 SE **ELEVATION:** 56 **MAP ID:** 1

NAME: DURHAM TRANSPORTATION
ADDRESS: 19984 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100475
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 8 **DIST/DIR:** 0.08 SE **ELEVATION:** 56 **MAP ID:** 2

NAME: HOANG S AUTO CARE
ADDRESS: 20009 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600101166
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

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LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-1269*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0000720*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Soil*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *1995-07-17*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 11 **DIST/DIR:** 0.16 NW **ELEVATION:** 50 **MAP ID:** 3

NAME: RICHARD S ROOFING SERVICE
ADDRESS: 19356 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 01/08/07
ID1: T06019707405
ID2:
STATUS: LEAK BEING CONFIRMED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *LOCAL AGENCY*
REGIONAL BOARD: *02*
LOCAL CASE NUMBER: *RO0002830*
RESPONSIBLE PARTY: *RICHARD INOCENCIO*
ADDRESS OF RESPONSIBLE PARTY: *1764 HUBBARD AVE*
SITE OPERATOR:
WATER SYSTEM:

CASE NUMBER:
CASE TYPE: *UNDEFINED*
SUBSTANCE LEAKED: *OIL and GREASE WASTE*
SUBSTANCE QUANTITY: *0*
LEAK CAUSE: *UNKNOWN*
LEAK SOURCE: *UNKNOWN*
HOW LEAK WAS DISCOVERED: *NO DESCRIPTION*
DATE DISCOVERED (blank if not reported): *1997-02-14 00:00:00*
HOW LEAK WAS STOPPED: *OTHER MEANS*
STOP DATE (blank if not reported): *9999-09-09 00:00:00*
STATUS: *LEAK BEING CONFIRMED*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):

ENTER DATE (blank if not reported):
REVIEW DATE (blank if not reported):
DATE OF LEAK CONFIRMATION (blank if not reported): *1997-03-21 00:00:00*
DATE PRELIMINARY SITE ASSESSMENT PLAN WAS SUBMITTED (blank if not reported):
DATE PRELIMINARY SITE ASSESSMENT PLAN BEGAN (blank if not reported):
DATE POLLUTION CHARACTERIZATION PLAN BEGAN (blank if not reported):
DATE REMEDIATION PLAN WAS SUBMITTED (blank if not reported):
DATE REMEDIAL ACTION UNDERWAY (blank if not reported):
DATE POST REMEDIAL ACTION MONITORING BEGAN (blank if not reported):
DATE CLOSURE LETTER ISSUED (SITE CLOSED) (blank if not reported):
REPORT DATE (blank if not reported): *1997-03-21 00:00:00*

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS: *0*
MTBE FUEL: *0*
MTBE TESTED: *NOT REQUIRED TO BE TESTED*
MTBE CLASS: *

Environmental FirstSearch
Site Detail Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

RCRAGN

SEARCH ID: 1 **DIST/DIR:** 0.18 SW **ELEVATION:** 45 **MAP ID:** 4

NAME: MORGAN BILL TRUCKING
ADDRESS: 251 LOUETTE CT
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: EPA

REV: 4/21/10
ID1: CAT080033442
ID2:
STATUS: TRANSPORTER
PHONE:

SITE INFORMATION

CONTACT INFORMATION: ENVIRONMENTAL MANAGER
251 LOUETTE CT
HAYWARD CA 94541

PHONE: 4152784260

UNIVERSE INFORMATION:

NAIC INFORMATION

ENFORCEMENT INFORMATION:

VIOLATION INFORMATION:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 5 **DIST/DIR:** 0.25 SE **ELEVATION:** 60 **MAP ID:** 5

NAME: BECK ROOFING
ADDRESS: 21123 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100163
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

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LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-0176*
LOCAL AGENCY:
LOCAL CASE NUMBER: *RO0000224*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Other Groundwater (uses other than drinking water)*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *2003-01-22*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 4 **DIST/DIR:** 0.38 SW **ELEVATION:** 50 **MAP ID:** 6

NAME: ANDERSON LIFT TRUCK TRANSPORT
ADDRESS: 310 BARTLETT
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100074
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-0081*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0001073*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Soil*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *1993-06-08*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch
Site Detail Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 9 **DIST/DIR:** 0.42 NW **ELEVATION:** 44 **MAP ID:** 7

NAME: JOSCON AUTO ELECTRIC
ADDRESS: 17771 MEEKLAND
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100758
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

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LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-0822*
LOCAL AGENCY:
LOCAL CASE NUMBER: *RO0000021*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Other Groundwater (uses other than drinking water)*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *2003-01-14*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 6 **DIST/DIR:** 0.45 NE **ELEVATION:** 60 **MAP ID:** 8

NAME: CLIFF S FORKLIFT
ADDRESS: 21031 WESTERN
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600100391
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

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LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-0431*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0001046*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Other Groundwater (uses other than drinking water)*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *1996-11-19*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Excavate and Dispose*

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 10 **DIST/DIR:** 0.50 SE **ELEVATION:** 52 **MAP ID:** 9

NAME: RAS-CO MANUFACTURING COMPANY
ADDRESS: 413 SUNSET
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600101947
ID2:
STATUS: OPEN - SITE ASSESSMENT
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *01-2121*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0000164*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN: *Gasoline*
POTENTIAL MEDIA AFFECTED: *Other Groundwater (uses other than drinking water)*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Open - Site Assessment*
STATUS DATE: *1996-02-29*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported): *Two gasoline USTs (one 550- and one 250-gallon) were removed in November 1994; limited overexcavation was conducted at that time. Two phases of overexcavation of 150 and 80 cubic yards of soil were conducted in March 1995 and October 1995, and a grab groundwater pit sample was collected. Soil was stockpiled and treated in with a hydrogen peroxide solution and appears to have been used as backfill thereafter. One well was installed in June 1999 and sampled once. An onsite agricultural well was also sampled. In the first sampling event it contained significant MTBE; a second sampling event found a non-detectable concentration. Additional work has been requested.*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2009-07-24*
ACTION (blank if not reported): *Notice of Violation - 20090724*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2009-01-08*
ACTION (blank if not reported): *Staff Letter - 20090108*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2009-07-24*
ACTION (blank if not reported): *Staff Letter - 20090724*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *2008-07-03*
ACTION (blank if not reported): *Staff Letter - 20080703*

ACTION TYPE (blank if not reported): *ENFORCEMENT*
DATE (blank if not reported): *1995-08-23*
ACTION (blank if not reported): *Notice of Violation - UNK*

- Continued on next page -

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 10 **DIST/DIR:** 0.50 SE **ELEVATION:** 52 **MAP ID:** 9

NAME: RAS-CO MANUFACTURING COMPANY
ADDRESS: 413 SUNSET
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600101947
ID2:
STATUS: OPEN - SITE ASSESSMENT
PHONE:

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Reported*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Discovery*

ACTION TYPE (blank if not reported): *Other*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported): *Leak Stopped*

ACTION TYPE (blank if not reported): *REMEDIATION*
DATE (blank if not reported): *1950-01-01*
ACTION (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE
MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Environmental FirstSearch
Site Detail Report

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 2 **DIST/DIR:** 1.00 NE **ELEVATION:** 85 **MAP ID:** 10

NAME: MONTGOMERY STREET PROJECT
ADDRESS: 21659 MISSION BLVD
HAYWARD CA 94541
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 10/03/08
ID1: CAL60000807
ID2: EVALUATION
STATUS: INACTIVE - NEEDS EVALUATION
PHONE:

GENERAL SITE INFORMATION

Site Type:	*Evaluation*
Status:	*Inactive - Needs Evaluation*
Status Date:	*2008-08-11*
NPL Site:	*NO*
Funding:	*Responsible Party*
Regulatory Agencies Involved:	*SMBRP*
Lead Agency:	*SMBRP*
Project Manager:	*HOMAYUNE ATIQEE*
Supervisor:	*Mark Piros*
Branch:	*Berkeley*
Acres:	*0.72*
Assessor s Parcel Number:	*NONE SPECIFIED*
Past Uses:	*VEHICLE MAINTENANCE*
Potential Contaminants:	*Polychlorinated biphenyls (PCBs) Tetrachloroethylene (PCE) TPH-gas TPH-gas02 Trichloroethylene (TCE) Dieldrin*
Confirmed Contaminants:	*Dieldrin Tetrachloroethylene (PCE) TPH-gas TPH-MOTOR OIL Polychlorinated biphenyls (PCBs) Trichloroethylene (TCE)*
Potential Media Affected:	*AQUI, SOIL, SV*
Restricted Use:	*NO*
Site Management Required:	*NONE SPECIFIED*
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

60000807

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

TRIBALLAND

SEARCH ID: 19 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 94580
ALAMEDA
CONTACT:
SOURCE: BIA

REV: 01/15/08
ID1: BIA-94580
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY,REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address http://home.nps.gov/nacd/

ERNS

SEARCH ID: 12 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: MILEPOST: 19.1 BLOSSOM WAY
ADDRESS: MILEPOST: 19.1 BLOSSOM WAY
HAYWARD CA
ALAMEDA
CONTACT:
SOURCE: NRC

REV: 9/13/09
ID1: NRC-907627
ID2:
STATUS: RAILROAD NON-RELEASE
PHONE:

SITE INFORMATION

THIS INFORMATION WAS OBTAINED FROM THE NATIONAL RESPONSE CENTER

INCIDENT DATE: 04-JUN-2009 16:16
REPORTED DATE: **04-JUN-2009 18:39**
TYPE OF INCIDENT: RAILROAD NON-RELEASE
CAUSE OF INCIDENT: OTHER
MEDIUM AFFECTED: RAIL REPORT (N/A)
MATERIAL NAME:
LOCATION: MILEPOST: 19.1 BLOSSOM WAY
SUSPECTED COMPANY:

DESCRIPTION: CALLER IS REPORTING A TRESPASSER FATALITY INVOLVED WITH A PASSENGER TRAIN AT A GRADE CROSSING. CALLER STATES THE INCIDENT WAS NOT SUICIDE RELATED. CALLER ALSO STATES A SERVICE DELAY IS

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 13 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: FORD STAGING SITE (9TH GRADE ACADEMY)
ADDRESS: 13900 14TH ST
SAN LEANDRO CA 94578
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 02/08/10
ID1: CAL60000465
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

GENERAL SITE INFORMATION

Site Type:	*School Investigation*
Status:	*No Further Action*
Status Date:	*2007-11-02 00:00:00*
NPL Site:	*NO*
Funding:	*School District*
Regulatory Agencies Involved:	*SMBRP*
Lead Agency:	*SMBRP*
Project Manager:	*MICHAEL HALL*
Supervisor:	*Mark Malinowski*
Branch:	*Sacramento*
Acres:	*2.68*
Assessor s Parcel Number:	*77E-1540-3*
Past Uses:	*RESIDENTIAL AREA, RETAIL - VEHICLES*
Potential Contaminants:	*30004 30013 40002 30025 3002502*
Confirmed Contaminants:	*30004 30013 31000 30025 3002502 40002*
Potential Media Affected:	*NMA, SOIL*
Restricted Use:	*NO*
Site Management Required:	*NONE SPECIFIED*
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

60000465

77E-1540-3

204190

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Preliminary Endangerment Assessment Report***
Completion Date: ***2007-11-02 00:00:00***
Comments: *DTSC approved the PEA with a No Further Action determination*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Preliminary Endangerment Assessment Workplan***
Completion Date: ***2007-05-02 00:00:00***
Comments: *DTSC reviewed the PEA Workplan and issued comments. DTSC received the revised PEA Workplan and comments the same day and DTSC comemnts were sufficiently addressed. DTSC approved the PEA Workplan.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Environmental Oversight Agreement***
Completion Date: ***2006-11-03 00:00:00***
Comments:

Area Name: ***PROJECT WIDE***
Sub- Area Name:

- Continued on next page -

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 13 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: FORD STAGING SITE (9TH GRADE ACADEMY)
ADDRESS: 13900 14TH ST
SAN LEANDRO CA 94578
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 02/08/10
ID1: CAL60000465
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

Document Type: ***Site Inspections/Visit (Non LUR)***
Completion Date: ***2007-05-17 00:00:00***
Comments: *PEA Sampling field oversight conducted by DTSC Project Manager*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Cost Recovery Closeout Memo***
Completion Date: ***2007-12-28 00:00:00***
Comments: *DTSC issued a CRU Memo to Accounting to close-out the project files.*

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 14 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: RIDING GROUP
ADDRESS: 14844-1486 EAST 14TH STREET AND 14875 BANCROFT AVE
SAN LEANDRO CA 94577
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 10/03/08
ID1: CAL60000625
ID2: EVALUATION
STATUS: INACTIVE - ACTION REQUIRED
PHONE:

GENERAL SITE INFORMATION

Site Type:	*Evaluation*
Status:	*Inactive - Action Required*
Status Date:	*2007-08-30*
NPL Site:	*NO*
Funding:	*Responsible Party*
Regulatory Agencies Involved:	*SMBRP*
Lead Agency:	*SMBRP*
Project Manager:	*JAYANTHA RANDENI*
Supervisor:	*Karen Toth*
Branch:	*Berkeley*
Acres:	*1.9*
Assessor s Parcel Number:	*77E-1593-15 , 77E-1593-11-3, 77E-1593-13-3*
Past Uses:	*RESIDENTIAL AREA*
Potential Contaminants:	*Chlordane Dieldrin*
Confirmed Contaminants:	*Dieldrin Chlordane*
Potential Media Affected:	*SOIL*
Restricted Use:	*NO*
Site Management Required:	*NONE SPECIFIED*
Special Programs Associated with this Site:	

OTHER SITE NAMES (blank below = not reported by agency)

201744

60000625

77E-1593-15

77E-1593-11-3

77E-1593-13-3

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 15 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: KIPP KING COLLEGIATE HIGH SCHOOL
ADDRESS: 2005 VIA BARRETT
SAN LORENZO CA 94580
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 02/08/10
ID1: CAL60001007
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

GENERAL SITE INFORMATION

Site Type: *School Investigation*
Status: *No Further Action*
Status Date: *2009-12-17 00:00:00*
NPL Site: *NO*
Funding: *School District*
Regulatory Agencies Involved: *SMBRP*
Lead Agency: *SMBRP*
Project Manager: *NEAL HUTCHISON*
Supervisor: *Mark Malinowski*
Branch: *Sacramento*
Acres: *11.78*
Assessor s Parcel Number: *NONE SPECIFIED*
Past Uses: *AGRICULTURAL - ROW CROPS, SCHOOL - HIGH SCHOOL*
Potential Contaminants: *30001 30003 30004 30006 30007 30008 30010 30013 30022 30023 30024 30025 30026 30027 30028*
Confirmed Contaminants: *30001 30003 30004 30022 30024 30025 30026 30023 30027 30028 30013 30006 30007 30008 30010*
Potential Media Affected: *NMA, OTH, SOIL*
Restricted Use: *NO*
Site Management Required: *NONE SPECIFIED*
Special Programs Associated with this Site:

OTHER SITE NAMES (blank below = not reported by agency)

60001007

204226

COMPLETED ACTIVITIES AND DTSC COMMENTS REGARDING THIS SITE (blank below = not reported by agency)

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Preliminary Endangerment Assessment Report***
Completion Date: ***2009-12-17 00:00:00***
Comments: *DTSC approved the PEA with a no further action determination for Kipp King on December 17, 2009.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Other Report***
Completion Date: ***2009-03-16 00:00:00***
Comments: *Phase I provided as background - PEA required.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Preliminary Endangerment Assessment Workplan***
Completion Date: ***2009-05-01 00:00:00***
Comments: *DTSC received and approved the revised workplan for implementation.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:

- Continued on next page -

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

STATE

SEARCH ID: 15 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: KIPP KING COLLEGIATE HIGH SCHOOL
ADDRESS: 2005 VIA BARRETT
SAN LORENZO CA 94580
ALAMEDA
CONTACT:
SOURCE: CA DTSC

REV: 02/08/10
ID1: CAL60001007
ID2: SCHOOL
STATUS: NO FURTHER ACTION
PHONE:

Document Type: ***Preliminary Endangerment Assessment Tech Memo***
Completion Date: ***2009-07-15 00:00:00***
Comments: *DTSC PM and toxicologist reviewed the SSI step-out sampling plan and agreed that is was adequate for delineation of soil around one portable.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Environmental Oversight Agreement***
Completion Date: ***2008-12-17 00:00:00***
Comments: *EOA signed by Sacramento Unit Chief.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Inactive Status Letter***
Completion Date: ***2009-01-28 00:00:00***
Comments: *Signed and processed inactive letter.*

Area Name: ***PROJECT WIDE***
Sub- Area Name:
Document Type: ***Cost Recovery Closeout Memo***
Completion Date: ***2009-12-23 00:00:00***
Comments: *DTSC sent a CRU to the accounting unit to summarize costs associated with the EOA Docket No. HSA-EOA-08/09-072*

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

LUST

SEARCH ID: 16 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: UNION PACIFIC RR HAYWARD SIDING
ADDRESS: WESTERN ST AND SUNSET
HAYWARD CA 94544
ALAMEDA
CONTACT:
SOURCE: CA SWRCB

REV: 06/22/10
ID1: T0600101758
ID2:
STATUS: COMPLETED - CASE CLOSED
PHONE:

RELEASE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

Please note that some data previously provided by the State Water Resources Control Board in the LUSTIS database is not currently being provided by the agency in the most recent edition. Incidents that occurred after the year 2000 may not have much information. Field headers with blank information following after should be interpreted as unreported by the agency.

LEAD AGENCY: *ALAMEDA COUNTY LOP*
REGIONAL BOARD CASE NUMBER: *NA*
LOCAL AGENCY: *ALAMEDA COUNTY LOP*
LOCAL CASE NUMBER: *RO0002701*
RESPONSIBLE PARTY:
ADDRESS OF RESPONSIBLE PARTY:
SITE OPERATOR:
WATER SYSTEM:

CASE TYPE: *LUST Cleanup Site*
POTENTIAL CONTAMINANTS OF CONCERN:
POTENTIAL MEDIA AFFECTED: *Soil*
LEAK CAUSE:
LEAK SOURCE:
HOW LEAK WAS DISCOVERED:
DATE DISCOVERED (blank if not reported):
HOW LEAK WAS STOPPED:
STOP DATE (blank if not reported):
STATUS: *Completed - Case Closed*
STATUS DATE: *1999-04-13*
ABATEMENT METHOD (please note that not all code translations have been provided by the reporting agency):
ENFORCEMENT TYPE (please note that not all code translations have been provided by the reporting agency):
DATE OF ENFORCEMENT (blank if not reported):
SITE HISTORY (blank if not reported):

MTBE DATA FROM THE CALIFORNIA STATE WATER RESOURCES CONTROL BOARD LUSTIS DATABASE

MTBE DATE(Date of historical maximum MTBE concentration):
MTBE GROUNDWATER CONCENTRATION (parts per billion):
MTBE SOIL CONCENTRATION (parts per million):
MTBE CNTS:
MTBE FUEL:
MTBE TESTED:
MTBE CLASS:

Target Property: 19745 MEEKLAND AVE
HAYWARD CA 94541

JOB: SF_289963

TRIBALLAND

SEARCH ID: 17 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 94541
ALAMEDA
CONTACT:
SOURCE: BIA

REV: 01/15/08
ID1: BIA-94541
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY,REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address http://home.nps.gov/nacd/

TRIBALLAND

SEARCH ID: 18 **DIST/DIR:** NON GC **ELEVATION:** **MAP ID:**

NAME: BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION
ADDRESS: UNKNOWN
CA 94578
ALAMEDA
CONTACT:
SOURCE: BIA

REV: 01/15/08
ID1: BIA-94578
ID2:
STATUS:
PHONE:

BUREAU OF INDIAN AFFAIRS CONTACT INFORMATION

OFFICE: Pacific Regional Office
CONTACT: CLAY GREGORY,REGIONAL DIRECTOR

ADDRESS: 2800 Cottage Way
Sacramento CA 95825
PHONE: Phone: 916-978-6000
FAX: Fax: 916-978-6099

The Native American Consultation Database (NACD) is a tool for identifying consultation contacts for Indian tribes, Alaska Native villages and corporations, and Native Hawaiian organizations. The database is not a comprehensive source of information, but it does provide a starting point for the consultation process by identifying tribal leaders and NAGPRA contacts. This database can be accessed online at the following web address http://home.nps.gov/nacd/

Environmental FirstSearch Descriptions

NPL: ***EPA*** NATIONAL PRIORITY LIST - The National Priorities List is a list of the worst hazardous waste sites that have been identified by Superfund. Sites are only put on the list after they have been scored using the Hazard Ranking System (HRS), and have been subjected to public comment. Any site on the NPL is eligible for cleanup using Superfund Trust money.
A Superfund site is any land in the United States that has been contaminated by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.
FINAL - Currently on the Final NPL
PROPOSED - Proposed for NPL

NPL DELISTED: ***EPA*** NATIONAL PRIORITY LIST Subset - Database of delisted NPL sites. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.
DELISTED - Deleted from the Final NPL

CERCLIS: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS)- CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL.
PART OF NPL- Site is part of NPL site
DELETED - Deleted from the Final NPL
FINAL - Currently on the Final NPL
NOT PROPOSED - Not on the NPL
NOT VALID - Not Valid Site or Incident
PROPOSED - Proposed for NPL
REMOVED - Removed from Proposed NPL
SCAN PLAN - Pre-proposal Site
WITHDRAWN - Withdrawn

NFRAP: ***EPA*** COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY INFORMATION SYSTEM ARCHIVED SITES - database of Archive designated CERCLA sites that, to the best of EPA's knowledge, assessment has been completed and has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.
NFRAP – No Further Remedial Action Plan
P - Site is part of NPL site
D - Deleted from the Final NPL
F - Currently on the Final NPL
N - Not on the NPL
O - Not Valid Site or Incident
P - Proposed for NPL
R - Removed from Proposed NPL
S - Pre-proposal Site
W – Withdrawn

RCRA COR ACT: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
RCRAInfo facilities that have reported violations and subject to corrective actions.

RCRA TSD: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM TREATMENT, STORAGE, and DISPOSAL FACILITIES. - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that treat, store, dispose, or incinerate hazardous waste.

RCRA GEN: ***EPA/MA DEP/CT DEP*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM GENERATORS - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities that generate or transport hazardous waste or meet other RCRA requirements.
LGN - Large Quantity Generators
SGN - Small Quantity Generators
VGN – Conditionally Exempt Generator.
Included are RAATS (RCRA Administrative Action Tracking System) and CMEL (Compliance Monitoring & Enforcement List) facilities.
CONNECTICUT HAZARDOUS WASTE MANIFEST – Database of all shipments of hazardous waste within, into or from Connecticut. The data includes date of shipment, transporter and TSD info, and material shipped and quantity. This data is appended to the details of existing generator records.
MASSACHUSETTES HAZARDOUS WASTE GENERATOR – database of generators that are regulated under the MA DEP.
VQN-MA = generates less than 220 pounds or 27 gallons per month of hazardous waste or waste oil.
SQN-MA = generates 220 to 2,200 pounds or 27 to 270 gallons per month of waste oil.
LQG-MA = generates greater than 2,200 lbs of hazardous waste or waste oil per month.

RCRA NLR: ***EPA*** RESOURCE CONSERVATION AND RECOVERY INFORMATION SYSTEM SITES - Database of hazardous waste information contained in the Resource Conservation and Recovery Act Information (RCRAInfo), a national program management and inventory system about hazardous waste handlers. In general, all generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities to state environmental agencies. These agencies, in turn pass on the information to regional and national EPA offices. This regulation is governed by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984.
Facilities not currently classified by the EPA but are still included in the RCRAInfo database. Reasons for non classification:
Failure to report in a timely matter.
No longer in business.
No longer in business at the listed address.
No longer generating hazardous waste materials in quantities which require reporting.

ERNS: ***EPA/NRC*** EMERGENCY RESPONSE NOTIFICATION SYSTEM (ERNS) - Database of incidents reported to the National Response Center. These incidents include chemical spills, accidents involving chemicals (such as fires or explosions), oil spills, transportation accidents that involve oil or chemicals, releases of radioactive materials, sightings of oil sheens on bodies of water, terrorist incidents involving chemicals, incidents where illegally dumped chemicals have been found, and drills intended to prepare responders to handle these kinds of incidents. Data since January 2001 has been received from the National Response System database as the EPA no longer maintains this data.

Tribal Lands: ***DOI/BIA*** INDIAN LANDS OF THE UNITED STATES - Database of areas with boundaries established by treaty, statute, and (or) executive or court order, recognized by the Federal Government as territory in which American Indian tribes have primary governmental authority. The Indian Lands of the United States map layer shows areas of 640 acres or more, administered by the Bureau of Indian Affairs. Included are

Federally-administered lands within a reservation which may or may not be considered part of the reservation.
BUREAU OF INDIAN AFFIARS CONTACT - Regional contact information for the Bureau of Indian Affairs offices.

State/Tribal Sites: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
The SMBRPD displays information in six categories. The categories are:
1. CalSites Properties (CS)
2. School Property Evaluation Program Properties (SCH)
3. Voluntary Cleanup Program Properties (VCP)
4. Unconfirmed Properties Needing Further Evaluation (RFE)
Please Note: FirstSearch Reports list the above sites as DB Type (STATE).
5. Unconfirmed Properties Referred to Another Local or State Agency (REF)
6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program.
CORTESE LIST-Pursuant to Government Code Section 65962.5, the Hazardous Waste and Substances Sites List has been compiled by Cal/EPA, Hazardous Materials Data Management Program. The CAL EPA Dept. of Toxic Substances Control compiles information from subsets of the following databases to make up the CORTESE list:
1. The Dept. of Toxic Substances Control; contaminated or potentially contaminated hazardous waste sites listed in the CAL Sites database. Formerly known as ASPIS are included (CALSITES formerly known as ASPIS).
2. The California State Water Resources Control Board; listing of Leaking Underground Storage Tanks are included (LTANK)
3. The California Integrated Waste Management Board; Sanitary Landfills which have evidence of groundwater contamination or known migration of hazardous materials (formerly WB-LF, now AB 3750).
Note: Track Info Services collects each of the above data sets individually and lists them separately in the following First Search categories in order to provide more current and comprehensive information: CALSITES: SPL, LTANK: LUST, WB-LF: SWL

State Spills 90: ***CA EPA*** SLIC REGIONS 1 - 9- The California Regional Water Quality Control Boards maintain report of sites that have records of spills, leaks, investigation, and cleanups.

State/Tribal SWL: ***CA IWMB/SWRCB/COUNTY*** SWIS SOLID WASTE INFORMATION SYSTEM-The California Integrated Waste Management Board maintains a database on solid waste facilities, operations, and disposal sites throughout the state of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites. For more information on individual sites call the number listed in the source field..
Please Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
WMUDS-The State Water Resources Control Board maintained the Waste Management Unit Database System (WMUDS). It is no longer updated. It tracked management units for several regulatory programs related to waste management and its potential impact on groundwater. Two of these programs (SWAT & TPCA) are no longer on-going regulatory programs as described below. Chapter 15 (SC15) is still an on-going regulatory program and information is updated periodically but not to the WMUDS database. The WMUDS System contains information from the following agency databases: Facility, Waste Management Unit (WMU), Waste Discharger System (WDS), SWAT, Chapter 15, TPCA, RCRA, Inspections, Violations, and Enforcement's.
Note: This database contains poor site location information for many sites in the First Search reports; therefore, it may not be possible to locate or plot some sites in First Search reports.
ORANGE COUNTY LANDFILLS LIST- A list maintained by the Orange County Health Department.

State/Tribal LUST: ***CA SWRCB/COUNTY*** LUSTIS- The State Water Resources Control Board maintains a

database of sites with confirmed or unconfirmed leaking underground storage tanks. Information for this database is collected from the states regional boards quarterly and integrated with this database.
SAN DIEGO COUNTY LEAKING TANKS- The San Diego County Department of Environmental Health maintains a database of sites with confirmed or unconfirmed leaking underground storage tanks within its HE17/58 database. For more information on a specific file call the HazMat Duty Specialist at phone number listed in the source information field.

State/Tribal UST/AST: ***CA EPA/COUNTY/CITY*** ABOVEGROUND STORAGE TANKS LISTING-The Above Ground Petroleum Storage Act became State Law effective January 1, 1990. In general, the law requires owners or operators of AST's with petroleum products to file a storage statement and pay a fee by July 1, 1990 and every two years thereafter, take specific action to prevent spills, and in certain instances implement a groundwater monitoring program. This law does not apply to that portion of a tank facility associated with the production oil and regulated by the State Division of Oil and Gas of the Dept. of Conservation.
SWEEPS / FIDS STATE REGISTERED UNDEGROUND STORAGE TANKS- Until 1994 the State Water Resources Control Board maintained a database of registered underground storage tanks statewide referred to as the SWEEPS System. The SWEEPS UST information was integrated with the CAL EPA's Facility Index System database (FIDS) which is a master index of information from numerous California agency environmental databases. That was last updated in 1994. Track Info Services included the UST information from the FIDS database in its First Search reports for historical purposes to help its clients identify where tanks may possibly have existed. For more information on specific sites from individual paper files archived at the State Water Resources Control Board call the number listed with the source information.
INDIAN LANDS UNDERGROUND STORAGE TANKS LIST- A listing of underground storage tanks currently on Indian Lands under federal jurisdiction. California Indian Land USTS are administered by US EPA Region 9.
CUPA DATABASES & SOURCES- Definition of a CUPA: A Certified Unified Program Agency (CUPA) is a local agency that has been certified by the CAL EPA to implement six state environmental programs within the local agency's jurisdiction. These can be a county, city, or JPA (Joint Powers Authority). This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994.
A Participating Agency (PA) is a local agency that has been designated by the local CUPA to administer one or more Unified Programs within their jurisdiction on behalf of the CUPA. A Designated Agency (DA) is an agency that has not been certified by the CUPA but is the responsible local agency that would implement the six unified programs until they are certified.
Please Note: Track Info Services, LLC collects and maintains information regarding Underground Storage Tanks from majority of the CUPAS and Participating Agencies in the State of California. These agencies typically do not maintain nor release such information on a uniform or consistent schedule; therefor, currency of the data may vary. Please look at the details on a specific site with a UST record in the First Search Report to determine the actual currency date of the record as provided by the relevant agency. Numerous efforts are made on a regular basis to obtain updated records.

State/Tribal IC: ***CA EPA*** DEED-RESTRICTED SITES LISTING- The California EPA's Department of Toxic Substances Control Board maintains a list of deed-restricted sites, properties where the DTSC has placed limits or requirements on the future use of the property due to varying levels of cleanup possible, practical or necessary at the site.

State/Tribal VCP: ***CA EPA*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances. The Voluntary Cleanup Program (VCP) category contains only those properties undergoing voluntary investigation and/or cleanup and which are listed in the Voluntary Cleanup Program.
Please Note: FirstSearch Reports list the above sites as DB Type VC.

RADON: ***NTIS*** NATIONAL RADON DATABASE - EPA radon data from 1990-1991 national radon project collected for a variety of zip codes across the United States.

State Permits: ***CA EPA/COUNTY*** SAN DIEGO COUNTY HE17 PERMITS- The HE17/58 database tracks establishments issued permits and the status of their permits in relation to compliance with federal, state, and local regulations that the County oversees. It tracks if a site is a hazardous waste generator, TSD, gas station, has

underground tanks, violations, or unauthorized releases. For more information on a specific file call the HazMat Duty Specialist at the phone number listed in the source information field.
SAN BERNARDINO COUNTY HAZARDOUS MATERIALS PERMITS- Handlers and Generators Permit Information Maintained by the Hazardous Materials Division.
DEPARTMENT OF TOXIC SUBSTANCES CONTROL HAZARDOUS WASTE MANIFEST INVENTORY-Records maintained by the CA DTSC of Hazardous Waste Manifests used to track and document the transport of hazardous waste from a generator's site to the site of its final disposition.

State Other: ***US DOJ*** NATIONAL CLANDESTINE LABORATORY REGISTER - Database of addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the U.S. Department of Justice ("the Department"), and the Department has not verified the entry and does not guarantee its accuracy. All sites that are included in this data set will have an id that starts with NCLR.

State Other: ***CA EPA/COUNTY*** SMBRPD / CAL SITES- The California Department of Toxic Substances Control (DTSC) has developed an electronic database system with information about sites that are known to be contaminated with hazardous substances as well as information on uncharacterized properties where further studies may reveal problems. The Site Mitigation and Brownfields Reuse Program Database (SMBRPD), also known as CalSites, is used primarily by DTSC's staff as an informational tool to evaluate and track activities at properties that may have been affected by the release of hazardous substances.
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6. Properties where a No Further Action Determination has been made (NFA)
Please Note: FirstSearch Reports list the above sites as DB Type (OTHER).
Each Category contains information on properties based upon the type of work taking place at the site. For example, the CalSites database is now one of the six categories within SMPBRD and contains only confirmed sites considered as posing the greatest threat to the public and/or the potential public school sites will be found within the School Property Evaluation Program, and those properties undergoing voluntary investigation and/or cleanup are in the Voluntary Cleanup Program. LA COUNTY SITE MITIGATION COMPLAINT CONTROL LOG- The County of Los Angeles Public Health Investigation Compliant Control Log.
ORANGE COUNTY INDUSTRIAL SITE CLEANUPS- List maintained by the Orange County Environmental Health Agency.
RIVERSIDE COUNTY WASTE GENERATORS-A list of facilities in Riverside County which generate hazardous waste.
SACRAMENTO COUNTY MASTER HAZMAT LIST-Master list of facilities within Sacramento County with potentially hazardous materials.
SACRAMENTO COUNTY TOXIC SITE CLEANUPS-A list of sites where unauthorized releases of potentially hazardous materials have occurred.

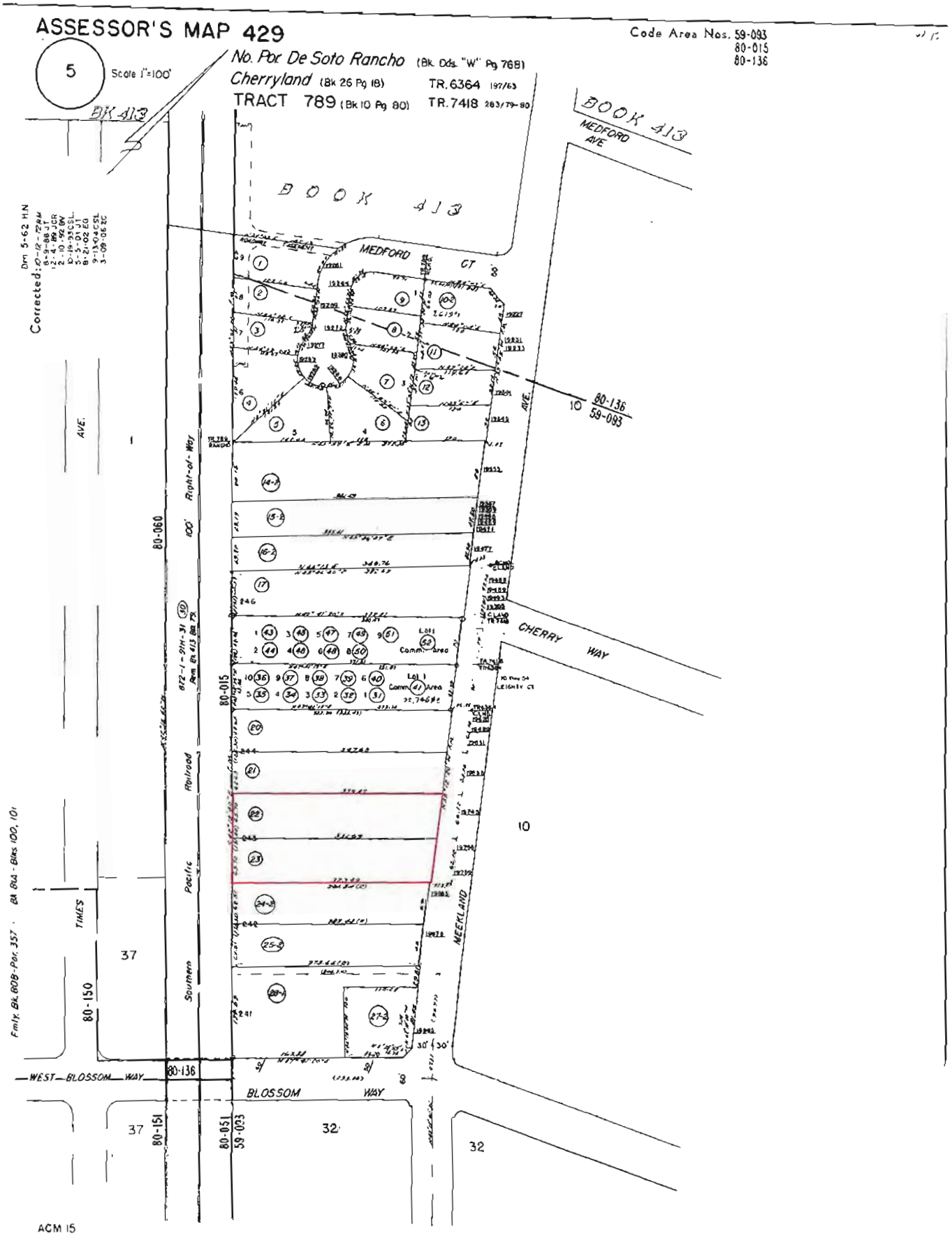
APPENDIX C

REFERENCES

REFERENCES

Item	Date(s)	Source
Topographic Map	1978	United States Geological Service (USGS)
Regulatory Database	July 2, 2010	Track Info Services - Environmental First Search
Aerials	1946, 1958, 1968, 1970, 1980, 1993, 2004, 2008	USGS & Google Earth
City Directories	1940 - 2008	Hayward Public Library
Building Records	1949 - 1984	Alameda County Building Department
Parcel Map	2010	Alameda County Assessor
Water Quality Report	2009	City of Hayward
User Questionnaire	July 21, 2010	Alameda County Redevelopment Agency

AGENCY RECORDS



Building Inspection Division

224 West Winton Avenue, Hayward — Phones: JE 7-5800 & Main 7-0

APPLICATION FOR BUILDING PERMIT

TYPE BUILDING ( )

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows:

COMM. ATT. GARAGE TO DWELL. USE — Group I

Location R-S-D-3

Lot — Block — Tract — Zone

19745 MEEKLAND AVE.

X-Ray.

Estimated Value, $4000.00
(Includes all material and labor for finished building)

Owner ARTHUR L. ARCHER

Address 19755 MEEKLAND AVE.

Architect — No

Engineer — No

Builder SAME — No

Address

FOUNDATION			
	MATERIAL	EXTERIOR	INTERIOR
TOP WIDTH			
BOTTOM WIDTH			
DEPTH			

SUPERSTRUCTURE			
	SIZE	SPACING	GRADE
S. W. Plate			
Girders			
Joists Floor			
Joists Ceiling			
Studs Ext.			
Studs Int.			
Rafters			

COVERING	
EXTERIOR WALLS	
INTERIOR WALLS	
ROOF	

(1) The builder agrees to save, indemnify, and keep harmless the County of Alameda against all liabilities, judgments, costs and expenses which may in any way accrue against the County in consequence of the granting of this permit or in consequence of any work performed hereunder by the owner thereof, and will in all things strictly comply with the conditions of this permit and with the ordinances and laws of the County of Alameda governing same.

Arthur L. Archer
Signature of Owner, Agent or Builder

Address

Date

Telephone Number

FOR DEPARTMENT USE ONLY

Date Issued — Permit No. 5421

Building Fee

Sewer Fee

Plumbing Fee

Electrical Fee

Total Fee


REQUEST FOR INSPECTION
REQUEST FOR INSPECTION
REQUEST FOR INSPECTION
REQUEST FOR INSPECTION
EYECOM
1200

BUILDING INSPECTION DEPARTMENT

APPLICATION FOR BUILDING PERMIT

TYPE IV BUILDING: STEEL

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows.

WAREHOUSE BUILDING Group G.

Location M-1

Lot Block Tract Zone

19745 MEEKLAND AVE

HAYWARD

Estimated Value $ 900.00

Includes all material and labor for finished building

Owner A. L. ARCHER

Address SAME

Architect No.

Engineer No.

Builder SAME No.

Address

For Group J or minor buildings where no plans required, fill in this space			
FOUNDATION			
[illegible]			
SUPERSTRUCTURE			
[illegible]			

[illegible]

[illegible signature]

Signature of Owner

Address

Date

Telephone Number

FOR DEPARTMENT USE ONLY

Date Issued

Approved By

Permit Fee

Plan Checking Fee

Total Fee

COUNTY OF ALAMEDA

BUILDING INSPECTION DEPARTMENT

APPLICATION FOR BUILDING PERMIT

TYPE V BUILDING (Wood Frame)

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows:

DWELLING
Use of Building

1975

Location 2475 MEEKLAND AVE (REAR)

HAYWARD

Est. Cost $ 3200.00
Includes all material and labor for finished building

[illegible] WARD I [illegible]

[illegible] AME

Architect _____ No. _____

or

Engineer _____ No. _____

Builder [illegible] No. _____

For Group J or minor buildings where no plans required, fill in this space

FOUNDATION

MATERIAL	STRENGTH	MIX
TOP WIDTH		
BOTTOM WIDTH		
DEPTH		

SUPERSTRUCTURE

	SIZE	SPACING	GRADE
SILL			
GIRDER			
INSIDE STUD			
OUTSIDE STUD			
STUDS, 2nd			
STUDS, 3rd			
RAFTERS			

COVERING

EXTERIOR WALLS	
INTERIOR WALLS	
ROOF	

(1) (We) hereby agree to save, indemnify, and keep harmless the County of Alameda against all liabilities, judgments, costs and expenses which may in any way accrue against said County in consequence of the granting of this permit, or from the use or occupancy of any sidewalk street or subsequent work by (me) (myself) and will in all things strictly comply with the conditions of this permit and the ordinances laws or rules of any governmental agency or body.

[illegible]
Signature of Owner, Agent or Builder

Address _____

Date JUL 9 1957 Telephone Number _____

FOR DEPARTMENT USE ONLY

Permit Number 11026

Date Issued JUL 9 1957

Fees Paid

Building Fee

Total Fee

Inspection Dates
Footings
Plumbing
Lath (Interior)
Lath (Exterior)
Final

HIGH FOCUS LOW

PUBLIC WORKS DEPARTMENT

Building Inspection Division

224 West Winton Avenue, Hayward — Phones: JE 7-5900 & Elgin 7-0844

APPLICATION FOR BUILDING PERMIT

TYPE BUILDING ( )

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows:

ALT. TO ATT. GARAGE Group I

Location R-S-D-3

Lot 19755 Block MEEKLAND AVE. Tract Zone

X Hay.

Estimated Value, $ 100.00

Includes all material and labor for finished building

Owner ARTHUR L. ARCHER

Address SAME

Architect No.

Engineer No.

Builder SAME No.

Address

For Group 3 or minor buildings where no plans required, fill in the space

FOUNDATION

MATERIAL	EXTERIOR	FOOTS
TOP WIDTH		
BOTTOM WIDTH		
DEPTH		

SUPERSTRUCTURE

	SIZE	SPACING	SPAN
SILL OR SILL			
GIRDERS			
FIRST FLOOR			
JOISTS CEILING			
RIDGE BD.			
RAFTERS OR			
RAFTERS			

COVERING

EXTERIOR WALLS	
INTERIOR WALLS	
ROOF	

In [illegible] agree to [illegible], indemnify, and save harmless the County of Alameda against all [illegible] suits, [illegible], costs and expenses which may in any way accrue against said County in consequence of the granting of this [illegible] or in any way arising from any negligence on the part of said [illegible] or his agents or employees in the [illegible] of said work, and I do hereby agree to defend at my own expense any and all [illegible] which may be brought against said County.

Arthur L. Archer

Signature of Owner, Agent or Builder

Address

Date Telephone No.

FOR DEPARTMENT USE ONLY

Date Issued Permit No.

Examined by Building Permit No.

Permit Fee Plumbing Permit No.

Plumbing Fee

Total Fee

ASSESSOR'S PARCEL NO. 84-755-21

Public Works Department

Building Inspection Division

111 West Monroe Avenue, Hayward

Application for Building Permit

1975

Highland Ave.

Parking

Owner

Address

Phone

Architect

Address

Phone

Engineer

Address

Phone

Contractor

Address

Phone

Signature

COUNTY OF ALAMEDA
PUBLIC WORKS DEPARTMENT

Building Inspection Division

224 West Winton Avenue, Hayward — Phones: JE 7-5800 & Elain 7-0844

APPLICATION FOR BUILDING PERMIT

TYPE IV BUILDING: STEEL

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows:

DETACHED PRIVATE GARAGE Group J

R-S-D-3

Location: Lot 19755 Block MEEKLAND Tract AVE. Zone

HAYWARD

Estimated Value: $ 1800.00
(Includes all material and labor for finished building)

Owner: ARTHUR L. ARCHER

Address: SAME

Architect: No.

Engineer: No.

Builder: OWNER No.

Address:

FOUNDATION

Material	Reinforcing	Anchor Bolts
Type Concrete		
Minimum Depth		
Earth		

SUPERSTRUCTURE

Size	Spacing	Grade
Sills		
Studding		
Joists, Ceiling		
Joists, Floor		
Girders		
Beams		
Rafters		

ROOFING

Arthur L Archer

Date: 12/17/62

12/17/62

Ad. C.F.

EYECOM 1200


EYECOM
1200

COUNTY OF ALAMEDA
PUBLIC WORKS DEPARTMENT

Building Inspection Division

224 West Winton Avenue, Hayward — Phone: JE 7-5800 & Klein 7-0844

APPLICATION FOR BUILDING PERMIT

TYPE V BUILDING (W.F.)

Application is hereby made for approval of the plans and specifications and for a permit for the construction or alteration of a building as follows:

ADDITION TO DW. Group I

Location: Lot 39 Block Tract RSD-5

1976 MEEKLAND AVE
HAYWARD

Estimated Value, $ 1600.00
(Include all material and labor for finished building)

Owner: A.L. ARCHER

Address: SAME

Architect: No.

Engineer: No.

Builder: SAME No.

Address:

Signature of Owner or Agent: Victor A. Archer

Address:

Date: AUG 2 1962

Telephone Number:

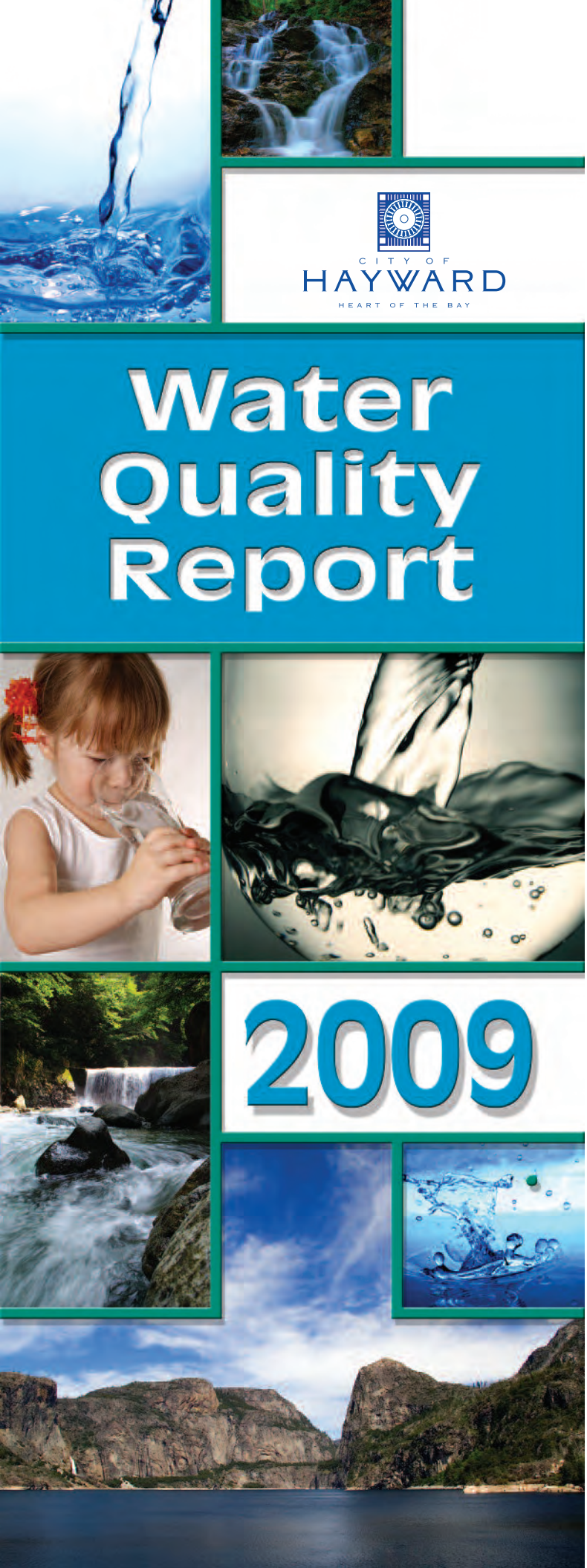
FOR DEPARTMENT USE ONLY

Date Issued: Permit No.

Approved by: S.P. Building Number:

Permit Fee: Remarks:

Inspector's Copy



The City of

HAYWARD

is pleased to present the ***2009 Water Quality Report (Consumer Confidence Report)*** to let customers know where Hayward drinking water comes from, how it is treated, the results of water quality monitoring, and other important information about water quality.

The City of Hayward purchases all of its water from the San Francisco Public Utilities Commission (SFPUC). The results of water quality monitoring by the SFPUC and City of Hayward confirm that the water delivered to Hayward customers in 2009 met or exceeded all state and federal standards. Important information about the contaminants that were detected in the drinking water in 2009 can be found in this report.

WHAT IS THE SOURCE OF OUR DRINKING WATER?

SFPUC is the sole supplier of water to Hayward. The Hetch Hetchy watershed, an area located in Yosemite National Park, provides the majority of water delivered by SFPUC to Hayward. Spring snow melt runs down the Tuolumne River and is stored in the Hetch Hetchy Reservoir.

SFPUC provides a small amount of water from the Alameda watershed, which is located in the East Bay and stored in the Calaveras and San Antonio Reservoirs. The two local reservoirs hold rain, local runoff, and some Hetch Hetchy water. This surface water source is supplemented by a small amount of ground water from Sunol Filter Galleries near the town of Sunol.

IS OUR WATER FILTERED AND TREATED?

The Hetch Hetchy reservoir water supply meets all federal and state requirements for watershed protection, disinfection treatment, bacteriological quality, and operational standards. As a result, the U.S.Environmental Protection Agency and the California Department of Health Services have granted the Hetch Hetchy water supply an exemption from filtration requirements. SFPUC monitors the Hetch Hetchy watershed weather conditions, water turbidity levels, microbial contaminants, and aqueduct disinfection levels, and complies with reporting requirements. This enables SFPUC to maintain a filtration exemption for the Hetch Hetchy source.

That portion of the water that is stored locally in the Calaveras and San Antonio reservoirs, including stored Hetch Hetchy water, is treated and filtered. SFPUC adds fluoride to all water delivered to Hayward.

The SFPUC prepares a report annually to evaluate conditions, water quality and potential contamination sources in the Hetch Hetchy watershed. The 2009 survey concluded that very low levels of contaminants associated with wildlife and human activity exist in this watershed. Local watersheds are evaluated every five years, most recently in 2005. The potential contamination sources are similar to those in the Hetch Hetchy watershed. The reports are available through the California Department of Health Services.

Who should seek advice about drinking water?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, as well as some elderly and infants can be particularly at risk from infections. These individuals should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the U.S. EPA Safe Drinking Water Hotline (1-800-426-4791) or at www.epa.gov/safewater.

HOW DO DRINKING WATER SOURCES BECOME POLLUTED?

Sources of drinking water (both tap water and bottled water) typically include rivers, lakes, oceans, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in the source water include:

- Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- Inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, USEPA and the California Department of Health Services prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

PUBLIC PARTICIPATION

The Hayward City Council is the governing authority of the Hayward Water System.The City Council meets at 7:00 pm, traditionally on the first four Tuesday evenings of the month, at the Hayward City Hall. The San Francisco Public Utilities Commission (SFPUC) is the governing authority of the sole wholesale water supplier to Hayward. The SFPUC meets on the second and fourth Tuesdays of the month at 1:30 p.m. at the San Francisco City Hall, Room 400. The public is invited to participate in these meetings.

FOR MORE INFORMATION...

If you would like more information about Hetch Hetchy water or water quality monitoring, please contact the SFPUC Water Quality Bureau at 877-737-8297 or visit its website at www.sfwater.org. For information about the City of Hayward Water Distribution System, please call the City of Hayward at 510-583-4727 or visit www.hayward-ca.gov.

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Ang ulat na ito ay naglalaman ng mahalagang impormasyon ukol sa iyong inuming tubig. Isalin-wika mo ito, o di kayaíy makipag-usap sa isang nakakaintindi nito.

Báo cáo này chứa đựng tin tức quan trọng về nước uống của quý vị. Xin phiên dịch ra, hay nói chuyện với người hiểu vấn đề này.

ਇਸ ਰਿਪੋਰਟ ਵਿੱਚ ਤੁਹਾਡੇ ਪੀਣ ਵਾਲੇ ਪਾਣੀ ਸੰਬੰਧੀ ਜ਼ਰੂਰੀ ਜਾਣਕਾਰੀ ਮੌਜੂਦ ਹੈ। ਇਸਦਾ ਅਨੁਵਾਦ ਕਰਾਓ ਜਾਂ ਇਸ ਬਾਰੇ ਉਸ ਵਿਅਕਤੀ ਨਾਲ ਗੱਲ ਕਰੋ ਜਿਹੜਾ ਇਸਨੂੰ ਸਮਝਦਾ ਹੋਵੇ।

इस रिपोर्ट में आपके पीने के पानी के बारे में महत्वपूर्ण जानकारी दी गई है। इसका अनुवाद करें, या जो कोई इसे समझते हों उनसे बात करें।

CITY OF HAYWARD
HEART OF THE BAY

WATER QUALITY DATA

The tables below and on the following page provide important information about contaminants that were detected in the water in 2009. You may be unfamiliar with the terms and abbreviations, so here are definitions to help you understand the water quality summary:

- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible.
- **Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (EPA).
- **Public Health Goal (PHG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- **Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Primary Drinking Water Standards:** MCLs and MRDLs for contaminants that affect health, along with their monitoring and reporting requirements, and water treatment requirements.
- **Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- **Regulatory Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- **Secondary Maximum Contaminant Level (SMCL):** Standards set by the U.S EPA/California Department of Health Services to protect the odor, taste, and appearance of drinking water.

Contaminants listed in the following tables were detected in 2009 drinking water samples. The tables contain the name of each substance, the highest level allowed by regulation (MCL), if applicable, the ideal goal for public health (PHG), if applicable, the amount detected, typical sources of the contamination, a key to the units of measurement, and notes to explain the findings. Laboratory staff analyzed the water samples for other contaminants. These contaminants, including MTBE, perchlorate, arsenic, herbicides and pesticides, were not detected.

PRIMARY DRINKING WATER STANDARDS
Mandatory Health-Related Standards

(See key and notes on next page)

Detected Contaminants	Unit	MCL	PHG (MCLG)	Range	Average (Maximum)	Typical Sources in Drinking Water
TURBIDITY [1] (SFPUC Treated Water)						
Unfiltered Hetch Hetchy Water	NTU	TT = 5	NS	0.27 – 0.52 [2]	(3.87) [3]	Soil Runoff
Filtered Water –Sunol Valley WTP	NTU	TT = 1	NS	-	(0.26)	Soil Runoff
	%	95% ≤ 0.3	NS	100% [4]	-	Soil Runoff
ORGANIC CHEMICALS						
DISINFECTION BY-PRODUCTS AND PRECURSORS (SFPUC Regional System)						
Total Trihalomethanes (TTHMs)	ppb	80	NS	9 – 54	(33) [5]	By-product of drinking water disinfection
Total Haloacetic Acids	ppb	60	NS	5 – 27	(21) [5]	By-product of drinking water disinfection
Total Organic Carbon [6]	ppm	TT	NS	2.3 – 3.2	2.7	Various natural and man-made sources
DISINFECTION BY-PRODUCTS (City of Hayward Distribution System)						
Total Trihalomethanes (TTHMs)	ppb	80	NS	38.6 – 50.0	(46.7) [5]	By-product of drinking water disinfection
Total Haloacetic Acids	ppb	60	NS	18.3 – 38.4	(27.7) [5]	By-product of drinking water disinfection
MICROBIOLOGICAL (SFPUC Regional System)						
Giardia lamblia	cysts/L	TT	(0)	0.01 – 0.05	(0.05)	Naturally present in the environment
MICROBIOLOGICAL (City of Hayward Distribution System)						
Total Coliform	%	5	(0)	0.0 – 1.9 [7]	0.3 [7]	Naturally present in the environment
INORGANIC CHEMICALS						
Fluoride [8]	ppm	2	1	<0.1 – 0.8	0.3 [9]	Erosion of natural deposits
DISINFECTANT RESIDUALS (City of Hayward Distribution System)						
Chlorine [10]	ppm	MRDL=4	MRDLG=4	0.0 – 2.9	2.2	Drinking water disinfectant for treatment
LEAD AND COPPER RULE STUDY (City of Hayward Tap Water)						
	Unit	**AL [11]**	**PHG**	**Range**	**90th Percentile**	**Typical Sources in Drinking Water**
Copper	ppb	1300	170	0.7 – 107.2	70.5 [12]	Corrosion of household plumbing systems
Lead	ppb	15	0.2	<1 – 3.5	1.1 [12]	Corrosion of household plumbing systems

SECONDARY MAXIMUM CONTAMINANT LEVELS
Consumer Acceptance Limits

Detected Contaminant	Unit	SMCL	Range	Average	Typical Sources in Drinking Water:
Aluminum	ppb	200	<50 – 51	<50	Erosion of natural deposits
Chloride	ppm	500	4 – 14.6	9.5	Runoff/leaching from natural deposits
Color	Unit	15	<5 – 9	<5	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	30 – 309	170	Substances that form ions when in water
Sulfate	ppm	500	1.1 – 35.6	16.6	Runoff/leaching from natural deposits
Total Dissolved Solids	ppm	1000	22 – 168	92	Runoff/leaching from natural deposits
Turbidity	NTU	5	0.08 – 0.33	0.16	Soil runoff

KEY TO UNITS OF MEASUREMENT

NTU	Nephelometric Turbidity Unit, which is a measurement of the clarity of water.
ppb	Parts per billion (or micrograms per liter), which is equivalent to one penny in $10,000,000.
ppm	Parts per million (or milligrams per liter), which is equivalent to one penny in $10,000.
NS	No standard has been identified.
cysts/L	Cysts per liter, which is a measurement of some microorganisms in water
<	Less than the stated detection limit.
µS/cm	MicroSiemens per centimeter.

OTHER WATER QUALITY PARAMETERS				
Parameter	Unit	ORL[13]	Range	Average
Alkalinity (as CaCO3)	ppm	NS	8 – 102	50
Boron	ppb	NS	<100 – 102	<100
Bromide	ppb	NS	<10 – 16	<10
Calcium (as Ca)	ppm	NS	2 – 26	12
Chlorate[14]	ppb	(800) NL	56 – 511	258
Hardness (as CaCO3)	ppm	NS	12 – 108	55
Magnesium	ppm	NS	0.2 – 8.8	4.5
pH	unit	NS	8.7 – 8.8	8.7
Potassium	ppm	NS	0.24 – 1.5	0.9
Silica	ppm	NS	4.8 – 7.5	5.9
Sodium	ppm	NS	3 – 23	14

CRYPTOSPORIDIUM AND GIARDIA

Cryptosporidium and *Giardia*, parasitic microbes found in most surface water supplies, can pose a potential health threat. If swallowed, either may produce symptoms of diarrhea, stomach cramps, upset stomach, and slight fever. Some people, including those with compromised immune systems, are more vulnerable to *Cryptosporidium* and *Giardia* than others and should seek advice about drinking water from their health care providers. The SFPUC tests regularly for *Cryptosporidium* and *Giardia* in both source and treated water supplies. In 2009, very low levels of *Cryptosporidium* and *Giardia* were occasionally detected in source and treated water.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants, including *Cryptosporidium* and *Giardia*. The presence of small amounts of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects may be obtained by calling the U.S. EPA Safe Drinking Water Hotline at (800) 426-4791 or visiting www.epa.gov/safewater.

LEAD IN YOUR DRINKING WATER

In 2007, the City of Hayward tested for lead in the tap water of 53 residences. All samples were below the Action Level of 15 parts per billion. Lead sampling is required every three years and will be performed again in 2010.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Hayward Water System is responsible for providing high quality drinking water, but cannot control the variety of materials used in your household or building plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking (use this water for other purposes – like watering plants). If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.

NOTES

(1) Turbidity is the water clarity indicator; it also indicates the quality of the water and the treatment system efficiency.
(2) Turbidity is measured every four hours. These are monthly average turbidities.
(3) This is the highest turbidity of the unfiltered water served to customers in 2009. The highest single turbidity measurement of the unfiltered water in 2009 was 10 NTU but the turbid water was pumped away to San Antonio Reservoir without serving customers. The startup of the San Joaquin Pipelines caused elevated turbidities as a result of sediment resuspension in the pipelines.
(4) This is the percent of time that the filtered water had turbidity of less than 0.3 NTU.
(5) Compliance is based on 4-quarter running average. Reported maximum is the highest quarterly running annual average in 2009.
(6) Total organic carbon is a precursor for disinfection byproduct formation. The TT requirement applies to the filtered water from SVWTP only.
(7) Percent of monthly samples that are positive in Hayward tap water.
(8) The SFPUC adds fluoride to the naturally occurring levels to help prevent dental caries in consumers. The CDPH requires our fluoride levels in the treated water to be maintained within a range of 0.8 ppm – 1.5 ppm. In 2009, the range and average of our fluoride levels were 0.7 ppm – 1.3 ppm and 1.0 ppm, respectively.
(9) The naturally occurring flouride levels in the Hetch Hetchy and SVWTP raw water are ND and 0.2 ppm, respectively.
(10) Water is disinfected with chloramine, a combination of chlorine and ammonia. Residual chlorine is measured.
(11) The 90th percentile level of lead and copper must be less than the action level.
(12) In 2007, 0 out of 53 sampled residences exceeded the Action Level at consumer taps.
(13) Other Regulatory Level
(14) There was no chlorate detected in the raw water sources. The detected chlorate in treated water is a byproduct of the degradation of sodium hypochlorite, the primary disinfectant used by SFPUC for water disinfection.

SAVING WATER... MORE IMPORTANT THAN EVER

There are many simple steps that residents and businesses can take to save water and possibly decrease the likelihood of more severe water rationing later on.

WATER CONSERVATION STARTS WITH YOU

- Replace old toilets with new, water-saving models.
- Replace old fixtures with new, water saving models.
- Turn off the faucet when you are brushing your teeth, shaving, and doing the dishes.
- Take shorter showers. Each minute you cut from your shower saves 2.5 gallons of water.
- Don't hose down sidewalks, driveways and pavement. Use a broom to clean these areas.
- Wash only full loads in your dishwasher and clothes washer.
- Repair leaks. To check for toilet leaks, place a couple of drops of food coloring in the toilet tank. If color appears in the bowl, there is a leak and you probably need a new flapper.
- Give your landscaping only the water it needs. For example, most established lawns need water only once or twice a week. Water only at night or very early in the morning in order to reduce evaporation and use water more effectively. Placing mulch around your plants also reduces evaporation
- Install faucet aerators in your kitchen and bathroom. Aerators reduce the volume of water coming from faucets, but because a little air is mixed into the water, you will feel like the flow is just as strong.
- Don't wash your car at home. Use a commercial car wash that recycles water.

USER QUESTIONNAIRE

ASTM E 1527-05 User Questionnaire

In order to qualify for the protection offered under the EPA All Appropriate Inquiry (AAI) Standard, the **User** (entities seeking to use the ASTM E1527-05 Practice to complete an environmental site assessment of the property; i.e. Lenders and/or Borrowers) must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that AAI is not complete. This information should be the collective knowledge of the entities relying on the Phase I. **Please note that you are not being asked to evaluate the property, but rather to provide your knowledge of information on the property.**

Site Name/Address: 19745 & 19755 Meekland Avenue, Hayward, CA

Person Interviewed/Title: Jaimie Benson/Redevelopment Manager Date: 7/21/2010

If known, when was the property initially developed? 1940's

If different, when were the current building(s) on the property constructed?_____

1. Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).

Are you aware of any environmental cleanup liens against the *property* that are filed or recorded under federal, tribal, state or local law? (**Note:** If unknown, a review of title records or an environmental lien search is recommended)

Yes ☐ No ☑ If you answer yes, please include an explanation in the space provided below:

_____
_____
_____
_____

2. Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).

Are you aware of any AULs, such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

Engineering Controls are defined as physical modifications to a site or facility to reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or ground water on the property). *Institutional Controls* are defined as a legal or administrative restriction on the use of, or access to, a site or facility to 1) reduce or eliminate the potential for exposure to hazardous substances or petroleum products in the soil or ground water on the property, or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment.

Yes ☐ No ☑ If you answer yes, please include an explanation in the space provided below:

_____
_____
_____
_____

3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).

As the *User* of this *ESA* do you have any specialized knowledge or experience related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or an adjoining *property* so that you would have specialized knowledge of the chemicals and processes used by this type of business?

Yes☐ No☑ If you answer yes, please include an explanation in the space provided below:

4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated (40 CFR 312.29).

a) Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*?

Yes☑ No☐ If you answer no, please include an explanation in the space provided below, including whether the lower purchase price is because contamination is known or believed to be present at the *property*?

5. Commonly known or *reasonably ascertainable* information about the *property* (40 CFR 312.30).

Are you aware of commonly known or *reasonably ascertainable* information about the *property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, as *User*:

a. Do you know the past uses of the *property*?

Yes☑ No☐

b. Do you know of specific chemicals that are present or once were present at the *property*?

Yes☐ No☑

c. Do you know of spills or other chemical releases that have taken place at the *property*?

Yes☐ No☑

d. Do you know of any environmental cleanups that have taken place at the *property*?

Yes☐ No☑

If you answered yes to any of the questions above, please include an explanation in the space provided below:

~~Past use has been as two residential units. Prior to this, it was probably agricultural land.~~

6. The degree of obviousness of the presence of likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).

As the *User* of this *ESA*, based on your knowledge and experience related to the *property,* are there any *obvious* indicators that point to the presence or likely presence of contamination at the *property*?

Yes ☐ No ☑ If you answer yes, please include an explanation in the space provided below:

_____
_____
_____
_____

Please provide the following property contact information:

Property Owner: Bank owned _____ Phone Number: _____

Key Site Personnel: _____ Phone Number: _____

Past Owner: _____ Phone Number: _____

APPENDIX D

QUALIFICATIONS

Michael Audibert, REA – Senior Project manager

MPA, Public Administration, San Francisco State University, 2000
BS, Business Administration, University of Vermont, 1992
California Registered Environmental Assessor (REA) #30090
Certified Mold Inspector (CMI) (Environmental Solutions Association), 2005

Mr. Audibert has over 8 years of experience in the environmental service industry. As Senior Project Manager, Mr. Audibert is responsible for conducting Phase I Environmental Site Assessments (ESAs), Real Estate Transaction Screens, radon screening projects, asbestos inspections, lead-based paint inspections, and reviewing/evaluating Phase II reports. His experience includes management of portfolio projects involving numerous properties throughout the US. Mr. Audibert also provides senior review expertise to ensure compliance and satisfaction of client requirements for Phase I Environmental Site Assessments and Transaction Screens.

His project management experience has included:

- Phase I Environmental Site Assessments and Real Estate Transaction Screens in conformance with ASTM.

- Various other environmental due diligence assessments, including regulatory compliance evaluations and industrial hygiene inspections, including asbestos, radon, lead-in-paint, lead-in-water, and mold surveys.

- The oversight of several Phase II soil and groundwater investigations for a variety of suspected contaminants for due diligence and liability purposes.

Mr. Audibert performed a Phase I Environmental Site Assessment (ESA) for a former steel and brass foundry to be converted into live/work loft apartments. The City of Oakland required that a comprehensive Phase I ESA be conducted for this property for foundry closure purposes. This project involved extensive agency and historical research, as well as determining what areas of the former foundry would be considered "at risk zones" for subsurface contamination.

Mr. Audibert has performed Phase I Environmental Site Assessments (ESAs) for existing gas stations developed on the site of former gas stations, as well as several historical and current leaking underground storage tank (LUST) sites, which involve an extensive historical use investigation and agency records review to determine the status of current and past underground storage tanks (USTs).

Steve G. Kovach, REA - Due Diligence Manager, Northern California Region

BA - Botany, Miami University (Ohio)
Minor – Conservation and the Environment
California Registered Environmental Assessor (REA Class I 08274)
Certified OSHA 40-Hour Hazardous Waste Operations and Emergency Response

Mr. Kovach has spent over nine years working in a broad range of environmental and engineering disciplines including: engineering and environmental due diligence services, industrial air, water, and wastewater permit compliance and monitoring, hazardous waste management and disposal, electrical utilities projects, environmental engineering projects, and wetland ecology research. Mr. Kovach has worked closely with regulatory agencies including the US Environmental Protection Agency, Department of Toxic Substance Control, California Water Resources Control Board, California Integrated Waste Management Board, Bay Area Air Quality Management District, East Bay Municipal Utilities District, and the US Department of Energy.

Currently, Mr. Kovach is the Due Diligence Manager, Northern California Region for AEI, specializing in environmental due diligence services. As a senior member of AEI, Mr. Kovach provides staff supervision and senior review expertise to ensure ASTM compliance and satisfaction of client requirements for environmental assessments. AEI's review process provides for customization of reports to client needs, as well as strict conformance to ASTM standards. Additionally, Mr. Kovach provides senior project management to ensure ASTM compliance and satisfaction of client requirements for Phase I Environmental Site Assessments, Transaction Screens, and other related environmental assessments performed throughout California, Arizona, Nevada, Oregon, and Washington.

THORBURN ASSOCIATES
ACOUSTICAL, TECHNOLOGY, AND LIGHTING DESIGN

1 November 2013

Ruth Knapp Vallejos, AIA rknapp@mullercaulfield.com
Muller and Caulfield Architects
339 15th Street, Ste. 300
Oakland, CA 94612

Subject: Acoustical Measurements, Cherryland Fire Station
TA Project # 13056

Dear Ruth,

This letter summarizes our site noise measurements at the proposed Cherryland Fire Station site.

ACOUSTICAL MEASUREMENTS

Weather
Acoustical measurements of the existing noise levels were made between 11:30am and 2:30pm on Monday 7 October 2013. The weather was sunny with a temperature in the upper 70s and mild winds at 7 mph.

Location
The measurement location was on the property, approximately 100 feet away from the southwest fence that runs parallel to the railroad tracks. Figure 1 below shows the measurement location from an aerial view.

Figure 1 - Aerial photograph of project site. Sound measurement location illustrated in red. Image courtesy of Google Maps.

Observations

Light traffic was heard from Meekland Ave. The apartment building to the southeast blocked most of the noise from Blossom Way. Traffic noise from I-880 was audible.

Hayward Executive Airport is one mile due southwest of the site. Significant aviation noise was heard as over 20 airplanes and helicopters traveled to and from the airport during the 3-hour length of the measurement.

There are two railroad tracks bordering the site to the southwest. Amtrak passenger trains use this line from about 4:00am to 11:00pm. The size of the passenger train varies depending on the service and number of passengers. Three trains passed in the duration of the measurement.

RESULTS

Summary

Ambient background noise levels were approximately 46 dBA[1]. Frequent aircraft flyovers brought the noise level up to between 55-65 dBA. Three trains passed during the time of the measurement. Their levels ranged from 78-100 dBA.

Train Noise

The large variation in train noise level is due to southbound trains using their horns as they pass and approach the Hayward Amtrak Station. Northbound trains leaving the station will typically pass at a lower speed. In the absence of a horn, a train will produce primarily low frequency noise from the wheels against the tracks. A horn will add significant mid and high frequency noise.

The graphs below show the frequency distribution of each of train pass event. Figure 2 is a northbound train that passed slowly and with little horn noise, so the sound is primarily concentrated in the low frequencies. The following figures show southbound trains that sounded their horns as they passed, resulting in much higher levels in the mid and high frequencies.

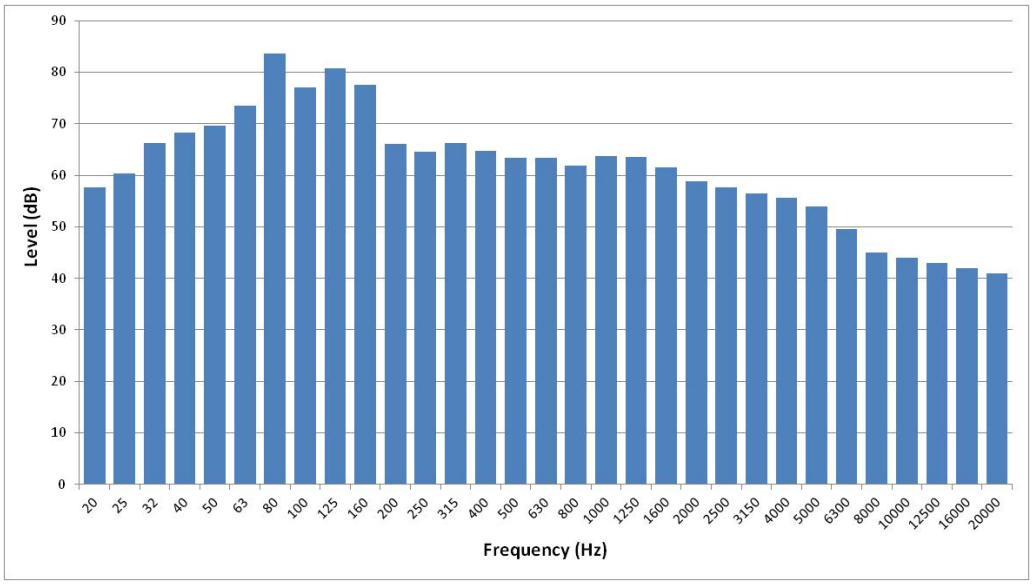


Figure 2 - Train #532 Northbound Frequency Spectrum

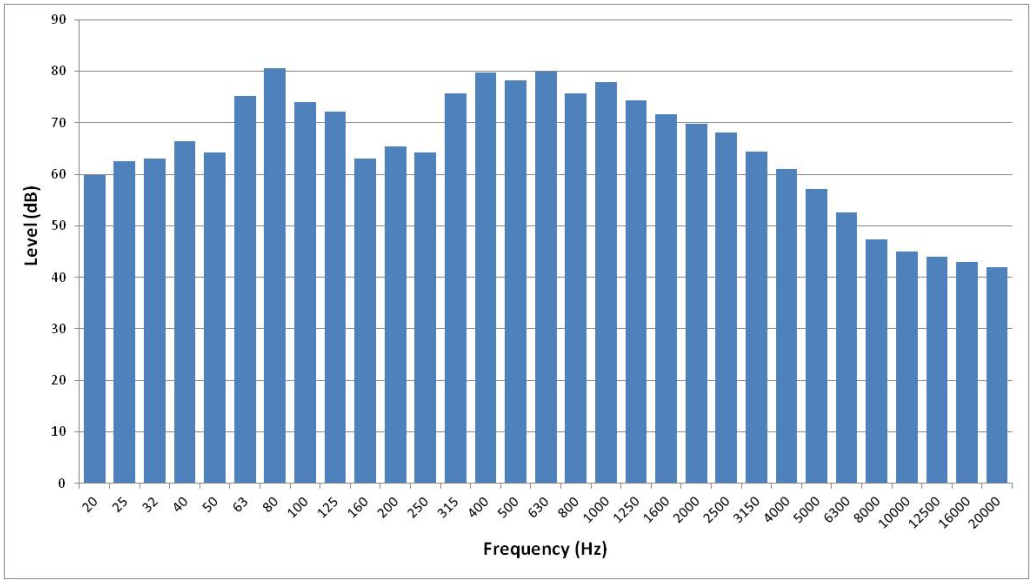


Figure 3 - Train #535 Southbound Frequency Spectrum

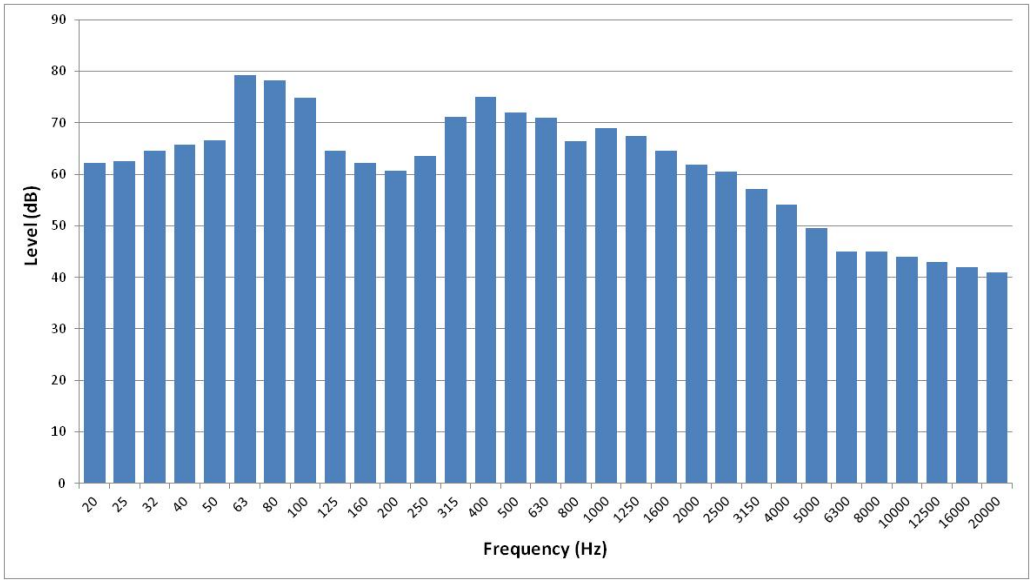


Figure 4 - Train #537 Southbound Frequency Spectrum

We hope this information is helpful. Should you have any questions or need additional information, please do not hesitate to contact us.

Sincerely,
Thorburn Associates, Inc

Philip Zumbrun
Acoustical Consultant

Lisa A. Thorburn, LEED AP
Principal

PMZ/dec
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[1] A-Weighted Sound Level (Noise Level) -- A term for the A-weighted sound pressure level. A-weighting is a frequency weighting which is commonly used to measure the loudness or "noisiness" of sounds. A-weighting filters the microphone signal in a manner which better correlates with the sensation of the human ear. The sound level is obtained by use of a standard sound level meter and is expressed in decibels. Sometimes the unit of sound level is written as dBA. All noise data in this letter are A-weighted.

THORBURN ASSOCIATES
ACOUSTICAL, TECHNOLOGY, AND LIGHTING DESIGN

1 November 2013

Ruth Knapp Vallejos, AIA rknapp@mullercaulfield.com
Muller and Caulfield Architects
339 15th Street, Ste. 300
Oakland, CA 94612

Subject: Exterior Envelope, Cherryland Fire Station
TA Project # 13056

Dear Ruth,

This letter summarizes our recommended exterior construction for the Cherryland Fire Station.

CRITERIA

As stated in our Acoustic Criteria Letter (dated 1 November 2013), the recommended background noise from train passing events should be 50 dBA[1] in the day rooms and 45 dBA in the sleeping area.

EXTERIOR ENVELOPE

The Day Room has the loudest exposure to exterior noise due to its proximity to the rail line. The location of the Sleep Rooms provides several acoustical benefits as the building will shield some of the noise coming from the louder southbound trains as they pass. Our recommendations are detailed below.

Exterior Walls

The exterior walls should have a rating of STC[2] 50-55 (mass of 6 lbs/sf), constructed similar to:
(outside to inside)
- Stucco system or equivalent
- Wood stud with a fully insulated cavity
- 2 layers of 5/8" gypsum board

Roof Deck

The roof deck should have a rating of STC 50-55 (mass of 13 lbs/sf), constructed similar to:
(outside to inside)
- layers of 5/8" DensDeck® Roof Board over osb sheeting or equivalent
- Wood joist with a fully insulated cavity
- 2 layers of 5/8" gypsum board

Windows

Windows are a source of acoustical "leaks." Special consideration should be given to the exterior glazing. We recommend the following window types, dependent on the amount of desired window coverage. Note that 1" insulated windows should NOT be used as they typically resonate at the low frequencies the trains will produce.

Recommended Window Type Based on Coverage of Final Exterior Wall Design

Window Coverage	**Recommended Window Type**
Less than 25% Windows	7/8" Laminated Insulating (1/8" [0.030" PVB] 1/8", 3/8" Air Space, 3/16")
Greater Than 25% Windoes	1-1/2" Double Laminated Insulating (1/8" [0.030" PVB] 1/8", 1" Air Space, 1/8" [0.030" PVB] 1/8")

We hope this information is helpful. Should you have any questions or need additional information, please do not hesitate to contact us.

Sincerely,
Thorburn Associates, Inc

Philip Zumbrun
Acoustical Consultant

Lisa A. Thorburn, LEED AP
Principal

PMZ/dec

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[1] A-Weighted Sound Level (Noise Level) -- A term for the A-weighted sound pressure level. A-weighting is a frequency weighting which is commonly used to measure the loudness or "noisiness" of sounds. A-weighting filters the microphone signal in a manner which better correlates with the sensation of the human ear. The sound level is obtained by use of a standard sound level meter and is expressed in decibels. Sometimes the unit of sound level is written as dBA. All noise data in this letter are A-weighted.

[2] Sound Transmission Class (STC) – The Sound Transmission Class is a single figure rating designed to give an estimate of the sound insulation properties of a partition. Numerically, STC represents the number of decibels of speech sound reduction from one side of the partition to the other. The STC is intended for use when speech and office noise constitute the principal noise problem.

1 November 2013

Ruth Knapp Vallejos, AIA
Muller and Caulfield Architects
339 15th Street, Ste. 300
Oakland, CA 94612

rknapp@mullercaulfield.com

Subject: Acoustical Design Criteria, Cherryland Fire Station
TA Project # 13056

Dear Ruth,

This letter summarizes our recommended acoustical design criteria for the Cherryland Fire Station.

ORDINANCES

The Alameda County Code of Ordinances section 6.60.040 is relevant to rooftop equipment, emergency generator testing, and any other noise created by mechanical equipment:

> *A. It is unlawful for any person at any location within the unincorporated area of the county to create any noise or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the exterior noise level when measured at any single- or multiple-family residential, school, hospital, church, public library or commercial properties situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in Table 6.60.040A or Table 6.60.040B following:*

Table 6.60.040A

Receiving Land Use – Single- or Multiple-Family Residential, School, Hospital, Church or Public Library Properties
Noise Level Standards, dB(A)

Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
30	50	45
15	55	50
5	60	55
1	65	60
0	70	65

Exterior to Interior noise reduction is addressed by the California Building Code in section 1207.11.2:

> ***1207.11.2 Allowable interior noise levels.*** *Interior noise levels attributable to exterior sources shall not exceed 45 db in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.*
>
> ***Note:*** *Ldn is the preferred metric for implementing these standards. Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with this section. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application.*

RECOMMENDATIONS

Based on the above ordinances and our experience with similar projects, we recommend the following acoustical design criteria.

Mechanical
In accordance with the county noise ordinance, the outdoor power generator, along with any outdoor mechanical equipment, should not exceed a steady state noise level of 50 dBA[1] during the day or 45 dBA during the evening at the property line.

Background Noise
The California Building Code specifies an interior noise level of 45 dBA, based on a day-night average sound level (Ldn[2]) measurement. Ldn is metric used for finding average noise levels over a 24-hour period, but does not properly take into account short, impulsive, noise events such as a train passing. As such, we recommend the design criteria be set by the loudest noise events rather than the 24-hour average, following the values below:

Recommended Background Noise Levels in Unoccupied Space Due to Train Events

Space	**Noise Level**
Sleeping Area	45 dBA
Day Rooms	50 dBA

We hope this information is helpful. Should you have any questions or need additional information, please do not hesitate to contact us.

Sincerely,
Thorburn Associates, Inc

Philip Zumbrun
Acoustical Consultant

Lisa A. Thorburn, LEED AP
Principal

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[1] A-Weighted Sound Level (Noise Level) -- A term for the A-weighted sound pressure level. A-weighting is a frequency weighting which is commonly used to measure the loudness or "noisiness" of sounds. A-weighting filters the microphone signal in a manner which better correlates with the sensation of the human ear. The sound level is obtained by use of a standard sound level meter and is expressed in decibels. Sometimes the unit of sound level is written as dBA. All noise data in this letter are A-weighted.

[2] Day/Night Sound Level (Ldn) -- A descriptor established by the Environmental Protection Agency (EPA) for the 24-hour average A-weighted noise level. Sound levels during the hours from 10:00 pm to 7:00 am, hours in which people are more sensitive to noise, are penalized 10 decibels (dB). A 10 dB increase in sound level is perceived by most people to be twice as loud.